

The President's Report

CARLETON UNIVERSITY 1960 - 1961



THE PRESIDENT'S REPORT

CARLETON UNIVERSITY

COLONEL BY DRIVE, OTTAWA, ONTARIO, CANADA

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I: REPORTS

REPORT OF THE PRESIDENT

The academic year 1960-61 opened with a swirl, as nearly two-fifths more freshmen than in the previous September poured into the classrooms and laboratories of Carleton. This surge, added to strong layers of returning students, put the total full-time enrolment up by an astonishing 35 per cent to 1157.

After a strenuous start, the year turned out to be one of solid accomplishment and relative calm. The large body of freshmen proved themselves a good addition to the University, and made a general academic record that was better than that of their recent predecessors. Members of a vigorous graduating class won more awards for graduate work than any before in the history of Carleton. While the pattern was not regular, a number of students at middle stages of their undergraduate careers did increasingly good work. For most faculty members it was a particularly heavy year, since the University had not the means to increase the staff in pace with the rising size of the student body. But, together with undergraduate teaching, research, scholarly work and graduate teaching went ahead healthily.

At a crowded Convocation, forced indoors by a May 27th snowstorm that will go down in history, the Chancellor conferred 170 bachelors degrees, 17 with honours; and eight masters degrees. The degree of doctor of laws, *honoris causa*, was conferred on Francis Gerard Patten, B.A., B.Paed., F.C.I.S., and on Moffatt St. Andrew Woodside, M.A., who gave the convocation address.

Among the graduates were 17 bachelors of engineering, Carleton's first. Their degrees were the culmination of years of intensive effort by the School of Engineering and by themselves. It was indicative of outside opinion of the School of Engineering and its courses that during the year the Association of Professional Engineers of Ontario, after a

careful inspection, accredited our programs for purposes of registration in the Association, and that three members of the class won open awards for graduate study.

Carleton continued to be a university that is almost as busy after five o'clock every day as it is before. Over 1,000 students, working on a part-time basis, took degree-level courses in the evening, apart from more than 500 others who followed evening extension courses. Three distinguished lecture series drew very considerable audiences. They were: a further series of *Our Living Tradition* lectures arranged by the Institute of Canadian Studies; a series on *Africa—The Political Pattern*; and a series on *Canada and the New International Economy*. Each series was given in part by members of the Carleton faculty, and in part by visitors. The publication of all three will add to the growing number of books carrying the name of Carleton.

Members of the public showed an increasing interest in the University. During the latter part of the year, 45 different outside organizations asked for showings of the new Carleton film, "Campus on the Move." Over 5,000 people visited the University on the Open House days of February 24 and 25.

Early in the year, Mr. James E. Coyne, who did so much to bring about the new campus, while continuing on the Board of Governors asked to be relieved of the duties of the chairmanship which he had held for over eight years. He was succeeded as chairman by another member of the Board, Dr. E. W. R. Steacie. Five new members were elected to the Board of Governors during 1961-62: D. A. Golden, A. M. Laidlaw, H. F. G. Letson, Mrs. A. H. Zimmerman, and Wilfrid Mavor.

On 4 October, 1960, the entire University was saddened by the unexpected death of Cecil V. Hotson. A graduate of Carleton, journalism medallist of 1950, he had been administrative assistant and alumni secretary since 1953, and embodied, especially to many alumni, the spirit of Carleton. On 6 May, 1961, Dr. J. Perry Young, a member of the original full-time faculty recruited in 1947, and devoted and beloved teacher of many students of French, succumbed to the effects of an illness which had afflicted him for a number of years. And on 11 July, 1961, Roderick C. McDonald, a member of a part-time staff

in Engineering for ten years, died. All three men were links with Carleton's early days.

Among the academic questions under active discussion during the year was that of entrance requirements. It was decided to raise the minimum requirements for senior matriculation (the most usual entry to Carleton) to an average of 55 per cent, apart from higher required standing in some subjects for certain degree courses. While this minimum is below the 60 per cent set by a number of Ontario universities, the Carleton attitude has been that the really important factor is the internal standards of the University, and at Carleton these are undoubtedly strong. Experience has continued to be that the proportionately small number of students admitted with lower than 60 per cent senior matriculation average do not differ greatly in university performance than those coming with an average of 60 to 65 per cent. In both groups, some blossom under university conditions, and some fall well below their school marks.

The system of numbering years at the University was also changed, so that henceforth the year following the usual entrance with senior matriculation will be called First Year, with senior years renamed accordingly. The change should do away with some confusion in comparing our years with those of most other universities of Ontario, although not with those of some other provinces. A year to which entrance is possible with a strong junior matriculation is being continued under the name of Qualifying University Year. Carleton has continued to provide this facility, now unusual in Ontario, for a certain number of students, since it finds that there are some young people who should, for various good reasons, start working under university conditions at this stage of their education, or for whom it would be difficult to take a corresponding year in a high school. The minimum requirement for entrance to the Qualifying University Year has been raised to an average of 65 per cent in suitable subjects of the Ontario Secondary School Graduation Diploma.

The chief improvement in the academic performance of new students was on the arts side. In science, although the record was a little better than the year before, the gap between what is done at high school and what has to be done at university is still very apparent. Faculty members in most disciplines, including the sciences, continue to be con-

cerned about undeveloped capacities of students with good senior matriculation records to express themselves well and clearly on paper, to absorb what they have read and heard, to attack problems defiantly, and, in a number of cases, to spell. There is nothing new about these complaints, and some will say that university people have always made them, and always will. Others also, however, are becoming more concerned, and there seem to be brighter hopes of needed developments in the school system.

Under present conditions, high schools face enormous problems in dealing with boys and girls of quite different abilities. A great deal of effort and attention has rightly been given to the large mass who are not going on to higher education. Large amounts of federal and public money are to be available for technical training of different kinds. But I believe that among all the needs, high priority should be given to providing strong foundations for the more able young people who are ready to work hard and who are aiming for higher education. If we do not give really good opportunities to our best, the quality of our whole society in the future will suffer. I believe with many others that a very considerable body of brighter pupils in the high schools, given the opportunity, could cover more ground than they do now by the end of Grade 12. If the necessary teaching and facilities can be arranged, then it will be possible for Grade 13 to become less a year of learning pages and pages of books by memory, and more what it should be—a year of work done partially in the university way.

The universities have their deficiencies, too. A freshman who sits only in large classes may not have the chances he should to catch the essentials of university ways of learning, especially if he has not gained some understanding at high school of how he will have to work at university. These essentials could be better conveyed through more direct contacts between freshmen and faculty members. But the stimulation of tutorials, discussion groups, and smaller classes in the early undergraduate years is possible only if there is a generous proportion of faculty to students. Critics wonder at times why the more personal ways of teaching followed in some of the great universities of the world cannot be applied more in some of our Canadian universities. The answer, of course, is that the great universities to

which they refer usually have half as many students per faculty member as we do.

Carleton will be under heavy strain in the next few years trying to meet the needs of a minimum number of teachers, and adequate physical facilities, for the students who will be asking for admission. As far as this university is concerned, the Canadian crisis in higher education of the 1960's does not lie ahead; it is here now. The 35 per cent increase in enrolment this year means new dimensions ahead in the demands on the University. The proportionate increase this year was about three times that of the national average of Canadian universities. It is more and more obvious that as the number of qualified young Canadians seeking higher education swells, a high share of the increased load is coming upon the younger, newly developing universities such as Carleton. The increasing contribution of this university toward the general higher education needs of all Ontario was shown by the fact that approximately 45 per cent of the new students this year came from outside the Ottawa area.

For 1961-62, despite higher entrance requirements, we are facing an enrolment of probably 1,500, and quite possibly over that number. The new magnitude of increase in beginning years now portends a call for well over 2,000 places in the University by as soon as 1962-63, and for at least 3,000 within four years.

Carleton can meet these demands coming on it in the next few years only if it somehow has the means for the necessary additional staff and expanded facilities. The proportionate increase in resources needed is illustrated by the fact that in 1961-62 Carleton's enrolment will have more than doubled in three years; and that the annual increases in the 1960's, if good applicants are not to be turned away, will run over three times what they were in the late 1950's.

This past year the buildings of the new campus were used just about to their full, planned capacity. Apart from a few points of tightness, faculty and students had good facilities for their work. For a change no construction work was going on. The University as a whole seemed to become well settled in the quarters that had seemed somewhat strange the year before. But the change in magnitude of new enrolments meant that the comparative calm would not last, and that next year would bring improvisations and facilities used at above normal capacity.

Plans were pressed ahead rapidly for new buildings that it was now apparent would be desperately needed in the fall of 1962. The main projects were: an extension to Norman Paterson Hall, the arts building; a lecture room building; residences for 174 men and 141 women; and a cafeteria centre. In addition, the students came forward with a proposal, which was accepted, that they pay for half the cost of building and maintaining a university centre. This would be an economically built, multi-purpose building that would have many uses including that of a gymnasium, a place for student activities and meetings, an examination hall, and a place for convocation and other university gatherings. Contracts for the first five of these buildings were let at the end of June, with promises of completion of construction by July, 1962.

To obtain money toward the construction of these new buildings, the University made a public appeal for funds during the year. The strenuous work of the campaign was led by Major-General Harry F. G. Letson, who gave most of his time to it from November until the end of the academic year. Of the objective of \$1,300,000, over a million dollars had been paid or pledged by the summer. Many supporters of higher education, individual and corporate, in Ottawa and in other parts of the country, gave generously. Others found they could not give or could contribute only relatively small amounts, explaining in many cases that they had had a great many demands on their generosity. The University and its students of the present and the future owe a great debt of gratitude to those who contributed to meeting future needs, and to the many friends of the University who gave a great deal of time and energy to the campaign.

The total of the contracts let in June was \$3,222,000. Necessary equipment, furniture, and other capital expenditures essential in the next two years will bring the total up to approximately \$4,500,000. Most of the cost of the residences and cafeteria centre is being covered by a mortgage from the Central Mortgage and Housing Corporation which, while it provides present cash, places a call on the future resources of the University. After taking into account an authorized provincial grant of \$1,000,000 for capital purposes for 1961-62, a grant of \$122,000 from The Canada Council for the arts facilities, and the funds from the campaign, a balance of about \$1,500,000 will still be left to be met during the year 1962-63.

The new rate of increase in enrolment has sharply advanced the schedule of future building needs. It is now plain that to meet the minimum requirements of the fall of 1963, a major addition to the library and a major increase in space for science and engineering will be necessary. By then, too, a central heating plant and maintenance building for the whole University will be required. These new projects should be started during 1961-62, but so far the necessary funds are not in sight.

The large increase in enrolment this year led to a reduction in operating deficit from an anticipated figure of \$192,000 to an actual figure at the end of the year of \$89,674. In effect, this improvement over the budgeted figures was made possible by the heavy loads taken by a staff that was proportionately too small for the size of the student body. The amount of the federal grant per full-time student dropped again this year; and although the provincial grant was \$485,000 compared with \$400,000 the year before, the amount per full-time student above Grade 13 level was also below the year before. In the coming year it is apparent that the federal amount per student will again be less, and that the provincial operating grant of \$600,000 will also represent a slightly lower amount again in respect of each full-time student.

In 1961-62 the University must balance operating income and expenditure, since it cannot continue to meet current deficits from meager reserves and borrowing. The Board of Governors decided with regret that student fees had to be raised. The increase in fees per student, however, will be less than the drop per student in provincial and federal grants. To balance current revenue and expenditure next year, the University has been forced to omit adding badly needed new staff members. This shortage of faculty members, and assistance for them, will be serious next year, and the worst kind of preparation for future years. A university having to develop at the rate at which Carleton is, should be able to add staff to meet needs ahead. As it is, the faculty will be overloaded meeting the teaching needs of next year.

The demand that is coming on Carleton in terms of numbers is increasingly plain. But as a university we know that quality must come first, before quantity if necessary, or else everything is lost. I believe that members of the public and their representatives need to understand that to preserve and advance quality on one hand, and at the same time

meet the needs of soaring numbers of young Canadians equipped for and wanting higher education, resources allocated to university work will have to grow geometrically in the next few years.

University presidents are accused at times of constantly pleading for money. If the charge is partly true it is because the need is so vital. The plea is not for one given institution or another. It is made on behalf of thousands of young Canadians, our ablest and most hard-working. They are not figures in forecasters' imaginations; they are very real boys and girls preparing themselves now in high schools for later education. The plea is for them, the people who will set the quality of our society in the future, and for the cause of knowledge in Canada in an age when knowledge is exploding throughout the world.

A. D. DUNTON,
President and Vice-Chancellor

DIVISIONAL REPORTS

Report of the Dean

The year 1960-61 was one of many satisfactions in the shape of substantial academic achievement. It was also the last, for some years to come, in which we had the momentary luxury of not having to improvise: that is to say, for the first time in many years we had sufficient space to conduct our ordinary classroom and seminar activities. The improvisations of recent years have been the result neither of neglect nor lack of foresight; they have been imposed upon us, late in the day, by unprecedented increases in enrolment. Not many universities have had to cope with an increase of 35 per cent in their undergraduate population in one year, but the 35 per cent may be only a foretaste of things to come over the next six years in particular, since within this period we do not anticipate any levelling off in the student constituency from which we draw our undergraduates. It is only fair to add, that every forecast of future enrolment set up at any time in the past eight years has been on the conservative side.

Improvisation or no, there are many advantages in the situation that confronts us. In this situation, liveliness is still the dominant item; in Carleton's history we have never been able to afford academic passivity or the mentality of "well-enough-will-do". We are in fact engaged in a highly competitive and sensitive intellectual undertaking. We have tried not to be less exacting in our standards as numbers increase; we have in fact tightened the application of such academic regulations as experience has suggested to be desirable in our situation. At the same time, through informal supervision of incoming students, and the resources of counselling which we are fortunate to command, we have been able to help dozens of students who have found difficulties in adjusting to university requirements or who find themselves ill-at-ease in the non-authoritarian university community we are striving to sustain.

The Senate has given extended attention to forward planning. The most obvious point in present studies has been to anticipate intelligently the teaching and other instructional requirements of the next eight years. Anticipation is never quite matched by realization; for though Carleton has benefitted, along with other universities, from the increasing provisions for the encouragement of graduate studies on this continent and abroad, there is still a lag in the availability of superior instructors at a beginning university level. This is not to say that we could not, granted unlimited funds, recruit a superior faculty; but we are now faced with the need of shaping the establishments of the larger departments so that seniority is spaced out, and so that members of departments do not all "grow old together". We have not so far been hampered by any absolute lack of academic mobility, about which complaints are occasionally heard in Canada: we have in fact been able to recruit new faculty members whose academic training has been undertaken in many parts of the world. So far as we can judge from the inside, looking out, Carleton continues to be an attractive prospect for the newest recruits, but we must clearly continue to keep it so.

In the effective use of our physical space, we have very nearly reached the conventional limits of our classroom space. We expect to have important additions to our facilities in 1962-63, but we may have an intervening year in which we shall have to rely on more unconventional uses; i.e., staggered time-tables, earlier classes, more laboratory sections in morning hours, and a revived use of Saturdays. Though the variety of course offerings for academic credit in evening courses has been curtailed and is unlikely to be increased, the conjunction of evening classes and extension courses has very nearly saturated our available space. In this situation our feeling has been that full-time day students must have priority. With some effort we have contrived to put nearly all courses required of day students in daylight hours.

There have been some slight alterations in course patterns, not so much in the shape of entirely new courses as in the re-adjustment of courses which have been offered for some years. This has been particularly apparent in departments where honours requirements have been somewhat stiffened; it has also applied in departments which until now have been numerically small, and which have recently offered, or will shortly begin to offer, courses leading to an honours degree.

The subject of work at honours level has occupied the attention of a number of faculty committees. Until now there have been two obvious objectives in the honours pattern: an intended progression into graduate studies, whether at Carleton or elsewhere, and as qualification for entry into Type A courses at Ontario College of Education leading to a specialist's certificate in high school subjects. In the first case the record has been encouraging: honours students in the graduating year have been awarded, among other distinctions, a Rhodes Scholarship (for the first time); three Fellowships of the Woodrow Wilson Foundation; one Athlone Fellowship in Engineering, and a variety of other open fellowships in Canadian and United States institutions. In the second case we have been engaged in extended negotiations to bring up-to-date the agreements with the Department of Education entered into originally in 1953 which cover the course requirements within an honours pattern which will qualify for entry into the Type A course. In this matter we are not, perhaps unfortunately, entirely free agents. Not all of the subjects in which we offer honours programs are "school subjects"; and students, for example, who would like to be secondary school teachers but whose honours program does not happen to fit in with an approved pattern cannot at present expect to qualify as specialists. On the other hand, so long as there is an overall shortage of fully-qualified high school teachers within the province, the pressures to complete any degree pattern which, together with two interim summer courses, will enable Carleton University graduates to teach in Ontario high schools, inevitably will divert away from the extra academic year required for an honours degree a considerable number of undergraduates of very superior scholastic attainments. The difficulty is not that they are not alert or satisfactory teachers: they are in many cases highly flattering recruits to the ranks of secondary school teaching. The real difficulty is that in some cases they are lost to academic ranks to which they might reasonably aspire.

It must not, however, be supposed that we are indifferent to the quantitative requirements for new secondary school teachers. In the Ottawa community a higher proportion of Grade 9 entrants complete at least Grade 12 than under any other high school system in Ontario. Of the students who complete Grade 13 an increasing proportion go on to university somewhere, and of that proportion an increasingly

higher percentage come to Carleton. For the past seven years we have taken in more than half of the students in this category. The quality of the teaching they receive in their high school years is of immediate concern to us. We have tried to express this concern in three particular ways.

First, we have continued to invite senior students from high schools throughout Eastern Ontario to spend a "high school day" on our campus. The actual "days" have become fewer by inviting more students on particular days, allowing them to choose among a variety of everyday lectures, to spend some time in the Library and in one or more laboratories, and generally to see and hear and feel what Carleton is like.

Secondly, we have continued our efforts to make high school teachers welcome, usually in compact groups a subject at a time. During this past year, for example, we have been host to teachers of Biology, French, and German; and three of my colleagues in History gave five lectures to teachers of History on "revisionist" ideas in recent historical scholarship, under arrangements made by the Professional Development Committee of the Ontario Secondary School Teachers Federation. There are constant day to day contacts of a more informal kind.

Thirdly, we have given some attention to prospective recruiting for the teaching profession itself. A noticeable number of entering students now state secondary school teaching as a vocational objective. The Registrar personally interviews most of these students, and in the spring he arranged a series of five noon-hour seminars for intending teachers at which attendance ranged from 70 to 85. The chief speakers were the Secretary of the Collegiate Board of Ottawa, the Assistant Secretary of the Canadian Teachers Federation (lately returned from a visit to USSR), Professor D. F. Dadson of the Ontario College of Education, the Field Secretary of the OSSTF, and Professor Bryan Keith-Lucas, of Nuffield College, Oxford, Visiting Professor of Political Science who has had wide experience with local educational authorities in the United Kingdom. The success of these seminars was a great encouragement, and we shall hope to repeat it.

It is perhaps not surprising that on the threshold of its twentieth year, well-wishers of Carleton should be impressed by the multitude of ways in which it touches the national capital community, and reaches out into provincial and national spheres as well. It would be strange if a faculty

board and professional staff numbering over 100 should not make some useful impact in the city and region, and the record of offices held, honours conferred, public addresses delivered, are the outward signs of inward convictions and a great deal of private and organizational devotion. Members of the Faculty Board serve as expert advisers in many ways throughout the year: on the executive committees of learned societies, on scholarship selection committees, on advisory boards of welfare agencies, and on many unpublicized voluntary efforts. Individually they have become articulate good citizens; collectively they are a resourceful, occasionally argumentative, but generally fair and tough-minded group of people.

While the University has encouraged this many-sidedness, from which it has benefitted enormously, it has also tried to provide encouragement. The number of professors on sabbatical leave has grown year by year; the number of individuals receiving grants from the Canada Council or comparable bodies has also grown. The Faculty Fund for Research and Publication (though much reduced from the previous year) has been used to advantage even in very modest grants. It has been powerfully buttressed by the Dean's Alumni Fund for University Development. I can speak personally on this latter point, because a sum of \$7,054.50 was provided for use at my discretion. With the advice and consent of a Committee of the Alumni Association headed by John Clarke, \$5000 was allocated for Alumni Scholarships to students in course. At present this is the most valuable single scholarship resource we have. Additionally, it was possible to provide special grants for individual departments, usually on a matching basis. Encouragement was given to research projects which happened to fall outside the scope of public grants. We were able to provide a subsidy in aid of publication of the lectures given in the series *The West Indies Federation*, and to add in various extra-budgetary ways to the resources of the Library.

The première on February 25 of the Carleton film "Campus on the Move", made by Crawley Films, was a considerable domestic occasion. The first screening was for members of faculty and their families; the second was for members of all other Carleton staffs and their families. Looking backwards, one was tempted to ask, "Was it really like this?" or "Did it really happen that way"? Looking forward, one must regard

the fact of the film as a lively demonstration of confidence in the future of Carleton.

We have, as a corporate body, withstood a number of searching tests over the past twenty years. We have been fortunate in being able to preserve a high degree of corporate continuity. As new buildings and augmented facilities come into service we shall, I hope, be even more grateful for the assurance of this continuity.

The index of liveliness has always seemed to me the most remarkable single aspect of Carleton University in action. It is doubtless a consumer index for many participants and spectators, but it is also a producer index for those of lengthening service and mounting responsibilities.

Carleton University is important for what it does, but it is also important because of what it stands for. To stand for excellence, thoroughness, freedom of expression, and for good sense and good humour in action, may require us to look afresh at the sources of our strength. One of the great sources of that strength, I believe, is our disposition to come down on the side of a non-authoritarian approach to education in general, and to augment the vocation of imaginativeness in university education in particular.

I am fortified in this view by some realization that our mental climate has changed perceptibly over the past twenty years, and may change still more. In a fascinating and perceptive glimpse into this altered climate, the French historian Marc Bloch, at about the moment Carleton was first beginning, wrote that, "we no longer feel obliged to impose upon every subject of knowledge a uniform intellectual pattern."¹ This is, in its way, the corollary of our index of liveliness. It suggests that we can have wide freedom of choice without any diminution of standards, enhanced respect for learning for its own sake without artificial conformity to merely conventional patterns of higher education. With nineteen years behind us, the future beckons with a fine prospect of excitement.

JAMES A. GIBSON,
Dean

¹Marc Bloch: *The Historian's Craft* (translated by Peter Putnam with an introduction by J. R. Strayer), Manchester University Press, 1954, p. 17.

The Division of Science

Institutions, like organisms, have periods of rapid growth, followed by plateaus of apparent quiescence when they consolidate their growth and prepare for the next major advance. This past year has been such a period: a time when we could examine the results of our move to a new campus, and evaluate the work that we have been doing.

We are very fortunate in being a young institution, where changes can readily be made. In the course of our growth we recognize that many of the things that we have done in the past are no longer appropriate, and that we should continue to experiment in the field of general education. In two departments this evaluation has taken the form of a serious re-examination of course patterns. In all, an attempt has been made to place particular emphasis on the honours program, without, at the same time, doing any injustice to the pass program. In the Department of Physics, the senior laboratory work has been separated from the lecture courses, and new experiments for senior undergraduates have been designed in such a way as to subject both honours and pass students to a more logical development of this discipline than has hitherto been possible, when it was necessary for us to alternate senior courses from one year to another. To aid them in the re-evaluation of their program, the Department of Geology invited a visiting committee, composed of Dr. William H. Dennen, Massachusetts Institute of Technology, Dr. R. D. Macdonald, Labrador Mining and Exploration Company Limited, and Dr. D. J. McLaren, Geological Survey of Canada, to review the existing undergraduate program and to suggest suitable changes in the curriculum.

In all departments active research work is in progress. With the addition of Dr. Cherniak to the staff, the Department of Chemistry has established a laboratory in radiation chemistry, equipped with a 2400

Curie cobalt 60 Gammacell. In the Physics laboratories the work in the field of dielectrics has been continued, and some electrical properties of aluminum oxide have been measured at high temperatures. A new high vacuum resistance furnace and a gas-fired furnace have been installed; this apparatus will be used in the study of the effects of particle size and sintering processes on the physical properties of ceramics. To complete this work, a high-power induction furnace will be needed, but funds are not available for this purpose. Several experiments on the electro-mechanical properties of organic liquids have been started. Work is continuing on the mass spectrograph, and in particular the work on the sulphur isotopes and the ultra high vacuum mass spectrometry of small gas samples from ancient sedimentary material. In addition, Dr. Munn has begun independent work on psycho-physics.

The Department of Biology has continued its fundamental studies in plant physiology, invertebrate taxonomy, morphology and physiological ecology. One very interesting outcome of fundamental work is the studies on plant succession in the St. Lawrence Seaway, being undertaken by Mrs. Isabel Bayly.

In the Department of Geology research has continued in a number of fields such as submarine geology and micropalaeontology, isotope geology, economic geology and applied geochemistry, petrology and structural mineralogy.

Believing that the University has an obligation to promulgate and advance knowledge to as large an audience as possible, the Department of Physics conducted a well-attended seminar during the winter months on "Nuclear Radiation and Fallout". The speakers for the seminar included members of our own staff, and specialists in the field from other Canadian laboratories. Discussions with local high school teachers have continued pertinent to the problem of establishing seminars on the recent advances in the different sciences taught in the high schools.

This year the Department of Biology acted as hosts to the Canadian Society of Plant Physiologists, where the highlight of the meeting was a Symposium on "Biochemistry and Physiology of Auxin Action".

In conclusion it should be stated that much of the research work of the Division of Science has been made possible through the generosity

of the National Research Council, the Ontario Research Foundation, the Geological Survey, Viditon Corporation Limited (now Ahearn and Soper Ltd.), Siemens and Halske A. G. in Germany, the J. P. Bickell Foundation, and the Canadian National Sportsmen's Show, who very kindly contributed a motor van to Dr. Smith's work in physiological ecology. Mention should also be made of the fact that the Department of Biology is the principal beneficiary to the will of the late Miss Linda S. Harris who bequeathed a sum of money for the establishment of a laboratory in animal cell physiology.

H. H. J. NESBITT,
Director, Division of Science

School of Engineering

The academic year 1960-61 has been of paramount significance to the School of Engineering at Carleton University. With a deep sense of pride and accomplishment, Carleton graduated its first class of engineering students. Of the 17 students who received the Bachelor of Engineering degree at the May Convocation, six have been accepted for post-graduate studies—two in Canada, three in the United States, and one in England. The following engineering graduates have been awarded fellowships and scholarships for post-graduate studies in 1961-62: John McCalla has been awarded an Athlone Fellowship for post-graduate work at the Imperial College, London; John Beshara, winner of the Association Gold Medal in Engineering, has been awarded the Murphy Fellowship in Civil Engineering for post-graduate studies at Northwestern University; John Buchan has been awarded a graduate assistantship for post-graduate studies at Purdue University.

The activities of the faculty members of the School during the past year were primarily related to the final development of the undergraduate program of studies, continued expansion and improvement of the engineering laboratory facilities, the preparation of an extensive report on the School of Engineering, and the initiation of a graduate program of studies.

The present undergraduate program represents the culmination of extensive study and effort by the faculty members of the School, particularly during the past two years. The program is based on our recognition of engineering as a profession and our belief that engineers are, and will continue to be, required to do creative work in engineering research, design and development. In the development of the curriculum and laboratory facilities it has been recognized that, if our graduates are to provide the creative leadership necessary in the future, they must

be well versed in the rapidly expanding knowledge of modern science. Accordingly, the first three years of the curriculum have been developed to provide opportunity for intensive study of chemistry, mathematics, physics, and the engineering sciences which form the bridge between the basic sciences and creative engineering work. In order to provide a stimulating program and some preparation for specialized engineering activities, four options or branches of study are offered in the fourth year of the program: civil engineering, electrical, mechanical, and engineering physics. To the extent possible and deemed desirable in a four-year undergraduate program, the emphasis in each of these branches is on specialized engineering analysis and design. The approximate division of the undergraduate engineering curriculum at Carleton, as described in the current University Calendar, is as follows: 34 per cent of the curriculum is devoted to the sciences, 11 per cent to the humanities and social sciences, 7 per cent to engineering skills and techniques, 34 per cent to engineering sciences, and 14 per cent to specialized engineering analysis and design.

The laboratory development work completed during the past two years included the electric circuits and machines, electronics, fluid mechanics, hydraulics, metallurgical, reinforced concrete, soil mechanics, structural, thermodynamics and heat transfer laboratories.

The undergraduate curriculum and laboratory facilities of the School of Engineering have been described in detail in a 597-page report. This report was completed in February and submitted for review by the Accreditation Committee of the Association of Professional Engineers of Ontario. Following a preliminary study of this report, our laboratory and library facilities were reviewed by a visiting sub-committee, comprising two engineering faculty members from the University of Toronto and two from Queen's University. We were delighted to learn that on the basis of the recommendation of the accreditation committee and the visiting sub-committee, the programs of study at Carleton in engineering physics, civil, electrical, and mechanical engineering had been accredited for purposes of registration in the Association of Professional Engineers of Ontario. We are also happy to announce the addition of two new scholarships in engineering at Carleton, awarded by the Ontario Professional Engineers' Foundation for Education: the

Engineering Entrance Scholarship in the amount of \$500.00, and a \$250.00 Scholarship to an undergraduate engineering student.

An important feature of the student activities of the past year was the first of what we hope to be an annual Engineering Open House, presented on 24 February. The Open House was organized by the Engineering Student Society to provide an opportunity for a guided tour of the engineering laboratories, as well as a discussion of the objectives of our engineering program of studies.

The graduate studies program in Aeronautical Engineering was offered, for the first time, during the past academic year with an enrolment of ten part-time students. A graduate program in Electrical Engineering has been developed and will be offered, for the first time, in September, 1961.

Three new faculty appointments were made at the beginning of the year: W. H. Bowes, Associate Professor; M. A. Gullen, Assistant Professor; and Karl Van Dalen, Lecturer. Eight new sessional lecturers, one technician, and a full-time secretary were also appointed during the past year. With these additions, the School of Engineering instructional staff has grown to eight full-time members and ten sessional lecturers. The technical and secretarial staff was expanded to four full-time members.

A preliminary study of our objectives and requirements for the immediate future was also completed during the past year. This study will provide some of the required information for the detailed plans of an engineering building which is currently scheduled for completion in 1964.

This has been a demanding, historic, and very rewarding year. We look forward to further development of the School of Engineering with the same vigorous rate of growth that has characterized the past few years.

JOHN RUPTASH,
Director, School of Engineering

The School of Graduate Studies

During the year 1960-61 the School of Graduate Studies shared in the general expansion of the University, with an increase of about 30 per cent in graduate enrolment. It became necessary to give some thought to the future development of the School. The general plan was to allow departments which were already suitably staffed to accept graduate students up to the number which could be given proper direction without reducing the effectiveness of the undergraduate instruction. As the enrolment increases, new appointments will be needed, and it is planned in some areas to make these partly with a view to maintaining a suitable proportion of graduate work. Some elementary courses can be taught as effectively in fairly large sections as in small, the resulting economy helping to improve both the honours and the graduate offerings. In some departments most valuable assistance by part-time instructors is available. By such methods a well-balanced development at all levels can be maintained as the enrolment goes up. A fairly wide range of graduate courses is already available in some departments.

One new program was approved during the year; this was Electrical Engineering which is to be offered in much the same way as the Aeronautical Engineering already established. Three departments had their first students receiving Master's degrees; these were Biology, English, and Physics.

An arrangement is to be entered into, by which abstracts of Master's and Doctor's theses are circulated, the theses microfilmed and copies made available.

The funds available for Teaching Fellowships were increased; a number of Fellowships of \$2,000 and some partial Fellowships of \$1,500 were awarded for 1961-62. Awards were made to applicants in Canada, England, India and the United States; it is regretted that the

overseas recipients were in the end unable to accept. The recipients who will be attending, however, have very good records and should make a great contribution.

The following list gives the names of those who received Master's degrees in May, 1961, with the titles of their theses:

| | |
|--|-------|
| Brown, George Altamont, B.A. (British Columbia) | M.A. |
| "The Financing and Administration of Some Aspects of Education Shared by Dominion and Provinces" | |
| Fischer, Gretl, B.A. (British Columbia) | M.A. |
| "Henry James: his Novels and Stories as Focal Points of Nineteenth-century Aesthetics" | |
| Junk, Donald James, B.A., B.Com. (Saskatchewan) | M.A. |
| "Position Classification in Canadian Federal Civil Service" | |
| McIver, John Mackay, B.A., B.Com. (Sir George Williams) | M.A. |
| "The Administration of Montreal, Past, Present and Future" | |
| Raghuram, Neelawar Vasudevarao, M.A. (Bombay) | M.A. |
| "Higher Personnel Recruitment in India and Canada" | |
| Stanford, Canute Lloyd, B.A. (London) | M.A. |
| "Staffing Pioneer Public Service: Recruitment, Training and Promotion in New States" | |
| Moss, William Wayne, B.Sc. (Carleton) | M.Sc. |
| "Studies on the Morphology and Behaviour of the Thrombidiid Mite, <i>Allothrombium Lerouxi</i> Moss (Acari)" | |
| Poirier, Michel Oscar, B.Sc. (Manchester) | M.Sc. |
| "A High Temperature Dielectric Cell and Electrical Measurements on Alumina" | |

M. S. MACPHAIL,
Director, School of Graduate Studies

School of Public Administration

The enrolment during 1960-61 continued to expand. There were five full-time and 26 part-time students registered in the M.A. program, and four full-time and 41 part-time in the Diploma program. There were 48 registered for the Certificate in Public Service Studies. In addition, there were 34 registrants as special students, generally to

meet entrance requirements. At the May Convocation, five M.A. degrees were conferred, and nine Diplomas in Public Administration and eight Certificates in Public Service Studies were awarded.

Professor Rowat was absent on sabbatical leave. With the aid of a Canada Council grant he has been making a study of parliamentary institutions and procedures in public administration in several countries of western Europe. In his absence, we were very pleased to have Professor Bryan Keith-Lucas of Nuffield College, Oxford, who contributed greatly to the work of the School during the year. We were also pleased to have Mr. A. M. Willms of the Records Centre of the National Library, who conducted the introductory course in Public Administration with success.

During the year we had 20 students from abroad under the Colombo Plan. A special course for them was supervised by Mr. J. H. Scarffe, on leave for this purpose from the Civil Service Commission, and all members of the Department gave some lectures in this course.

R. O. MACFARLANE,
Director, School of Public Administration

The Institute of Canadian Studies

Four students took courses in the graduate program of the Institute during the past year, and four additional students took undergraduate courses in order to qualify as candidates for the Master's degree. Reviewing the year's work, the Committee of Management examined the question of admission requirements (a particularly difficult question where the type of graduate program offered attracts students with mixed patterns of undergraduate study) and discussed ways of strengthening the effectiveness of the interdisciplinary approach. A list of major Canadian works in the humanities and social sciences was drafted and accepted as a reading requirement for the degree, and one new course—Canadian External Relations—was approved for entry in next year's Calendar. Two conspicuous gaps in the course offerings of the Institute, in economics and the fine arts remain to be filled. Here as elsewhere, shortage of staff is a serious obstacle to development.

The Institute has of course no staff of its own, nor even the means to encourage departments to make appointments which would at least in part favour its development. I believe we have reached the stage where we should have the means to take independent action along these lines; and since the University itself cannot be expected to provide funds on the scale required, I have recommended that the Institute push vigorously for endowment or subvention outside the university in the coming year. Meanwhile the search continues for ways as well as means of attracting first-class students and of promoting, beyond the limits of the degree program, advanced research in Canadian studies.

The "Living Tradition" series, which was allowed to lapse in 1960, was renewed in seven public lectures given on the campus between late January and early March of 1961. From this point on it will be renewed in alternate years only in order to make room in the off years for experimentation of the sort undertaken in the "Angry Thirties" seminar in 1960. In the fall term, marking its interest in the emergent Commonwealth, the Institute co-operated with the Department of Political Science to sponsor a series of public lectures on Africa. Taken together, the two series brought to Carleton distinguished speakers from Vancouver, Winnipeg, Toronto, Kingston, Montreal, and, in one case, Africa. Both lecture series were well received by audiences averaging close to 200 persons; both, through personal contacts, were a stimulus to staff and students; both will be published by the University of Toronto Press. The Institute also sponsored, this time jointly with the Department of English, a visit to the campus in January by Mr. Cid Corman, American poet and critic, who gave to a small but appreciative audience an interpretative reading of his poems. The rewards of these various forms of public activity are certainly not immediate, nor are they indeed ever very tangible, but in the opinion of the Committee they are considerable and well worth the time and money spent in securing them.

ROBERT L. McDougall,
Director, Institute of Canadian Studies

Report of the Registrar

Each year for five years the first item of this report has been to note the sharp rise in Carleton's full-time student enrolment. Again this can be noted, with the remarkable additional fact that the latest increase is no less than 35 per cent over the previous year—1,157 full-time students in 1960-61 as against 857 in 1959-60—the sharpest rise in the University's history, and the greatest recorded among established Canadian universities for 1961.

The full-time enrolment by divisions and schools, in comparison with 1959-60, was as follows:

| | <i>1960-61</i> | <i>1959-60</i> |
|-----------------------|----------------|----------------|
| Arts | 531 | 363 |
| Commerce | 103 | 85 |
| Engineering | 119 | 82 |
| Journalism | 63 | 51 |
| Public Administration | 24 | 5 |
| Science | 312 | 254 |
| Special | 5 | 17 |
| Total | <u>1,157</u> | <u>857</u> |

Of the 1,157 full-time total, approximately 740 (64 per cent) came to Carleton from Ottawa itself and the immediate commuting area, and 36 per cent from outside the Ottawa commuting district. The range of countries and distances from which the students come is impressive, and is separately summarized in the annual statistical report, but particularly interesting is the extent to which Carleton is now drawing students from all over Ontario.

In the meantime, the demands upon services of this office in providing sound off-campus housing have, of course, heavily increased, but

a concerted effort to increase the recommended housing lists during the spring and summer of 1960 meant that it was possible to provide satisfactory housing for all out-of-town students.

Among the foreign students who studied at the University during the past year were 20 who came under the auspices of the Colombo Plan. A mature group, many holding responsible positions at home, these students in many cases made a worthwhile contribution to campus clubs and discussions, and typified the advantage of encouraging enrolment from overseas in that they provided personal experience with other societies in the world community which could not be known otherwise by our native-born Canadian students.

In the University's evening division, where last year I had to report virtually no increase, there was again a sharp rise—from 916 in 1960-61 to 1,031 in the past year, or 12 per cent. This reflects the steadily increased value being placed upon further knowledge and educational status in Canada, and the decision of many civil servants, teachers, and business people to take advantage of the Carleton evening division to accomplish this. It is interesting that this strong trend has resumed in spite of a fee increase, some reduction of evening courses in order to conserve the strength of the day program, and the greater distance of the new campus from the centre of the city.

In the Carleton summer session the increase in students told the same story of marked rise in enrolment—508 enrolled in the summer of 1960 as against 469 in the previous summer, an increase of eight per cent and an all-time record. The summer school was for the second year a two-fold operation: a fairly large evening school of 19 courses, running with two sessions a week for three months; and a small day course operating daily for nearly six weeks. One interesting innovation on the new campus was the holding of a one-week summer seminar on the teaching of international affairs. Offered in co-operation with the United Nations Association in Canada, the seminar drew 40 teachers from various parts of Canada, and brought them into contact with a distinguished group of speakers and panelists from Parliament, the civil service, the universities, and the Press Gallery. The seminar was unique in Canada, and its success was seen in the large number of teachers participating who wrote asking that another similar seminar be held.

At Carleton, the word "extension" means "non-credit", and again in this area of the University there was a heavy enrolment and a very active year. Three features are special to the extension program here: there is no extension division as such, but the work is administered by a faculty committee and chairman, in collaboration with the Registrar; the courses offered must be sponsored by one of the university departments; and each course, although it may originate in the good offices or interests of some special group, must also be available to members of the general public. Under these conditions, a strong list of extension courses has been developed. Well over 500 people enrolled in the formal courses offered during the past year—aside from the several thousand who attended the public lectures organized by the University. Extension titles covered subjects as disparate as marine geology, creative English, criminology, space age problems, and problems of the later years; a complete list is provided separately in the statistical report.

In the field of scholarship, the University continued to draw more students of scholarship calibre than it could recognize by its entrance and in-course awards. The establishment in the spring of the new Henry Marshall Tory and Maxwell MacOdrum scholarships, and the increased value of the University Entrance scholarships, will help close the gap, but the need for scholarships and bursaries continues to be urgent.

One other effect of the strongly-rising tide of enrolments is that the system of allotting a number of new students to a faculty member for informal consultation is obviously now under increasingly heavy strain. The number of new students alone last fall was 559, nearly half the whole full-time student body and an increase of 164 over the previous year. Clearly the good effects of the faculty advising system will diminish as the increase in new students necessarily outruns the annual increase in full-time faculty.

The need has therefore actually increased for an Effective Reading Centre, as described in the Registrar's last annual report, as well as for a University Guidance Centre, of which perhaps the Reading Centre would be a part, so that as many students as possible can be helped to reach their full potentialities.

JOHN A. B. McLEISH,
Registrar

Report of the Bursar

The Financial Record

In the year 1960-61 income for current operations increased by \$280,000 over the year before. The main increases were

| | | |
|---------------------------------|----|-----------|
| Student fees | up | \$134,000 |
| Province of Ontario grant..... | up | 85,000 |
| Government of Canada grant..... | up | 61,000 |

At the same time expenditures for current operations increased by \$183,000. The main increases were

| | | |
|------------------------------------|----|-----------|
| Instruction | up | \$128,000 |
| Administration & General..... | up | 30,000 |
| Library | up | 8,000 |
| Plant Operation & Maintenance..... | up | 8,000 |

Income on capital account for the year totalled \$869,938. Of this \$400,000 was Province of Ontario capital grant, \$378,706 campaign receipts, and the balance was from miscellaneous sources. Expenditure on capital account, totalling \$447,104 was made up of

| | | |
|-------------------------------------|----|---------|
| Land | \$ | 5,099 |
| Rideau Campus Land Development..... | | 48,075 |
| Buildings | | 156,582 |
| Equipment and Furnishings..... | | 237,348 |

Income for current operations came from the following sources:

| | Amount | % |
|---|--------------------|--------------|
| Student Fees | \$ 620,754 | 40.7 |
| Investment Income (Net)..... | 18,274 | 1.2 |
| Province of Ontario Grant..... | 485,000 | 31.8 |
| Government of Canada Grant..... | 316,660 | 20.8 |
| Annual Giving Programmes..... | 41,287 | 2.7 |
| Bookstore & Cafeteria Income (Net)..... | 15,255 | 1.0 |
| Other | 27,642 | 1.8 |
| | <u>\$1,524,872</u> | <u>100.0</u> |

Current expenditures were made for the following purposes:

| | Amount | % |
|---------------------------------------|--------------------|--------------|
| Instruction ----- | \$ 988,664 | 61.2 |
| Library ----- | 110,458 | 6.9 |
| Administration ----- | 149,987 | 9.3 |
| Plant Operation and Maintenance ----- | 200,952 | 12.4 |
| General ----- | 110,051 | 6.8 |
| Bursaries and Scholarships ----- | 17,505 | 1.1 |
| Other ----- | 36,928 | 2.3 |
| | <u>\$1,614,545</u> | <u>100.0</u> |

Electronic Data Processing

The rapid growth of the University in student registration and in research has in recent years multiplied several-fold the quantity of bookkeeping and accounting work to be done.

Up until 1958 all the bookkeeping and accounting work was done by hand. At that time a bookkeeping machine was purchased.

Essentially this machine is a large number of adding machines built into the one frame, which does a certain amount of its work automatically. After a number of payroll cheques have been run we have on a single sheet a payroll summary listing each cheque individually and giving us totals of gross pay, net pay, deductions for Income Tax, deductions for Retirement Plan, University contributions to Retirement Plan, and in addition all the other deductions and the University contributions. At the same time an individual earnings card is posted which shows an up-to-date record of payments to each employee. Similarly, it provides us with the accounting materials for tuition fees, cash disbursements, cash receipts, general ledger posting, budget, and retirement plan.

Recently the load on this machine has reached such a point that at peak periods all the work cannot be handled as quickly as it should be. Consideration has therefore been given to increasing the mechanization of this work.

The larger universities have in the past moved through such things as bookkeeping machines, usually to punch card accounting, and more recently some of them to electronic data processing machines.

After some study, Carleton has decided to try the electronic data processing for one of our major jobs—student fees. For this purpose we have purchased a punch tape adding machine. This machine will produce simultaneously a printed tape, a ledger card, and a standard eight-channel punch tape for use in a computer. The printed tape will show in print every entry made on the machine, but will in our case total only the cash items. We will use this tape to balance cash and for audit purposes.

The ledger card, which is the individual student's fee record, will also be posted. The punched tape will be used in a computer on a service bureau basis, to produce monthly our fees journal and posting summary, our trial balance of fees receivable, and when required, our notices of instalment payments. This tape may be locked into the machine as a control measure. In this way, by purchasing one small machine and renting the facilities of the Service Bureau for a few hours a month, the University will be able to try out the advantages of electronic data processing.

F. J. TURNER,
Bursar

The Library

It is pleasant to be able to report with some assurance that the 35 per cent increase in student population did not cause an increase in the difficulties experienced by students in competing with each other for library books. Four-week loans to students increased by about the same per centage as the student body. Due to the purchase of extra copies of books in heavy demand, and to the careful selection of books to be placed "on reserve", the number of books placed on restricted loan was reduced and circulation of all categories of "reserve" books was likewise reduced. This eased difficulties for students and for staff. The number of requests placed for books which could be supplied, increased only slightly and was about four per cent of total circulation. The number of unfilled requests was 170. Losses appear to have doubled. Theft of books by students is a constant source of exasperation, and works real hardship on other students, but one must remember that losses remain less than one per cent of recorded circulation. The number of books borrowed on interlibrary loan decreased slightly, while the number lent increased by 50 per cent.

It seems likely that co-operation and planning are the answers to the problem of improved library service to rapidly increasing numbers of students. Faculty members who expect large classes have been ordering duplicates and paperbacks for next year and planning essay topics. The Library Committee, the Department of English and the Library staff have been working together on a revised program of instruction in the use of the library for freshmen. Many of the complaints which students make arise from their own lack of knowledge of how to use a library, and we are never satisfied with our own efforts to familiarize them with the techniques of library use.

The Library Committee and other members of Faculty continued to support the systematic study of our present book collection and the carefully planned improvement of it. Many hours of faculty time were spent on the preparation of lists of books required to provide a basis for good undergraduate studies. The result of all this bibliographical labour was the purchase of large numbers of books required to improve the basic collections in chemistry, engineering and physics, in history, economic history, labour, international relations, political science, public administration and psychology, in Classics, German, Spanish and philosophy. A number of other lists are in hand, and the program of systematic improvement will be continued in the coming year. Library staff members have made some study of book collections elsewhere, by preparing a subject directory of libraries in Ottawa for the Library Association of Ottawa.

The processing of books is more nearly up-to-date than it has been since 1948. Purchases have virtually all been catalogued; almost all gifts which are to be kept have been listed and most of these have been catalogued. Inroads have been made into the arrears of government documents to be catalogued. This is slow work, particularly since the existing documents collection is being recatalogued. A total of 9,679 volumes were added during the year; 5,577 orders were placed and several thousand out-of-print books were listed and advertised; 90 new subscriptions to periodicals were placed, bringing total subscriptions to 686.

The rising tide of students and of books has made planning for expansion necessary sooner than expected. Additional space under construction on the lower level will provide 90 seats and shelves for 19,000 volumes. The Library Committee has studied library needs, and estimates that an additional floor on the library will be required in 1963. Planning of this addition is proceeding although funds may not be available for it as soon as required. Assessment of the functioning of the existing building has formed part of the planning. Open stacks, self-service, and unsupervised reading rooms are to be retained in the addition. Continued use of wall-to-wall carpet and of luminous ceilings are recommended. A study is being made of heat-intake through the glass, the wall panels and the roof, with a view to making the addition and the existing building more comfortable in the heat of the summer.

The Claxton Memorial Fund enabled us to make substantial additions during the year to collections in the humanities and social sciences. A Canada Council grant of \$1,000 will enable us to improve resources for Slavic Studies. The Ottawa Presbytery Women's Association of the United Church of Canada gave \$1,000 for the purchase of books in Religion. Gifts of money were also received from the Lady Perley Chapter, I.O.D.E., from the Ottawa Chartered Accountants' Club, and from the Biology Seminar Group. Outstanding gifts of books were received from Mr. R. M. Fowler and Mr. J. B. C. Watkins. A remarkable collection of geological and other periodicals was received from Mr. J. McLeish who had been a life member of the Royal Statistical Society and of the Royal Economic Society since 1916. Substantial gifts of periodicals were also received from Texaco Canada Ltd. and from the Ottawa Historical Society.

In this year, as in other years, we have not given students anything like the service we would have liked to give, and we have not had money to buy many of the books we would have liked to buy, but nevertheless, I think we have every reason to count our blessings.

HILDA G. GIFFORD,
Librarian

The Carleton University Development Campaign, 1960-61

As anticipated for some time, it was necessary in 1960-61 to make a public appeal for capital funds for new buildings urgently needed by the University.

The Board of Governors decided on an objective of \$1,300,000, with the campaign to start in December. A great deal of efficient and effective preliminary organizational work had already been done by the Carleton Development Officer prior to the beginning of the campaign. Had it not been for the sound basis laid down before the campaign, it is doubtful if anything approaching the results attained would have been achieved. As soon as the General Chairman was appointed in October, recruitment of key personnel for the 1961 Campaign was begun, along with the preparation of campaign literature, lists, pledge cards, etc. This was continued when personnel of G. A. Brakeley & Co. Ltd. reported early in December to assist with the work.

Brigadier Wilfrid Mavor accepted the post as organizer for Toronto, and Brigadier C. M. Drury for Montreal. Their enthusiasm and the efficient efforts of their committees contributed greatly to the success of the campaign in these two cities.

Through the courtesy of the Metropolitan Life Insurance Company, campaign headquarters were opened at 189 Sparks Street in December and functioned there until the end of May. Operations then moved back to the University where Mr. D. J. Horan and a skeleton staff continued to work on the final phases of the campaign. By the summer, over one million dollars, or nearly 80 per cent of the objective, had been paid or pledged.

The Carleton University Development Campaign required the services of many community-minded volunteers who gave many hours of their time, and to them the University owes a debt of gratitude. Special

praise should be given to the University's students who participated so actively and who contributed so generously in this campaign. Our growing Alumni showed surprising strength and their contributions increased significantly over former campaigns.

The fact that Carleton is recognized as a national institution is evidenced by the fact that 50 per cent of the funds subscribed came from outside the Ottawa area.

The emergence of Carleton's new buildings in the next two years will serve as monuments to the many who contributed to this last campaign and the large numbers whose efforts produced much of the revenue needed for the University's continuing expansion.

H. F. G. LETSON,
General Chairman

The Alumni Association

The death October 4 of C. V. Hotson, Executive Secretary of the Alumni Association, was a severe blow to the association and a personal loss to many of the alumni. His name was synonymous with "alumni" at Carleton and it is a tribute to his enthusiastic and dedicated organization that the Alumni Association was able to carry on to a year of achievement. Thanks must be expressed to the National Executive with John Forbes as president, and to D. J. Heran and D. S. Swain and their Public Relations and Development office staffs who, in addition to their own duties, gave willing and capable assistance to the National Executive.

In memory of Mr. Hotson, the Alumni Association, with the cooperation of the university, has established the C. V. Hotson Memorial Award Fund to provide an annual \$100 award to a deserving student at Carleton.

Major projects during the year were the annual giving program, named the 1961 Dean's Alumni Fund for University Development, and the building up of alumni branches, particularly in Montreal and Toronto.

The Dean's Alumni Fund to date totals more than \$7,500 in donations from graduates. From this fund, four \$500 scholarships will be given to worthy Carleton students and the remainder allocated by Dean Gibson for special academic needs within the university. The campaign committee, headed by Charles Jeffrey, was able to make use of literature provided by the university's Development Campaign. Publicity given by news media to the general campaign was also of assistance to the alumni.

The building of alumni branches—a problem faced by nearly every university in North America—has met with some success. In the

Spring, President Dunton was guest of honor at social evenings in Toronto and Montreal, and Dean Gibson was guest of honor at a "campaign kick-off" party held by the Ottawa branch. The university's new film, "Campus on the Move" provided added nostalgia at the three gatherings. In May, the association held its Annual Reunion which included a panel discussion on nuclear disarmament, a 10-year reunion luncheon for the Class of '51 and a dance and smorgasbord in the evening.

In the 1961-62 period, the association will follow through on its plans for increased alumni-undergraduate co-operation and interest, and greater activity in the branches. Formation of a Winnipeg branch is also being planned.

SHIRLEY GILLESPIE,
Alumni Secretary.

The Student Personnel Office

Placement of 1961 Graduates

The year 1960-61 was a busy one for the Placement Office. The large increase in student population sharply accelerated the numbers of people who visited this office seeking information on jobs, completing application forms or registering for summer and permanent employment. There was also an increase in the number of employing agencies which were interested in Carleton students: 65 sent recruiting representatives to the campus between October and March; 30 more agencies got in touch with the Placement Office either by telephone or mail. Several industries and firms interested in the recruitment of engineers visited the campus for the first time in order to interview Carleton's first crop of graduating engineers. A total of 37 graduates accepted positions in business and industry. (This number includes appointments to Chartered Accountant firms and on newspapers).

The teaching profession has continued to attract a substantial number of the graduates. There are 31 who plan to teach in the fall or to attend teacher-training institutions. The majority of this group had signed teaching contracts prior to graduation and will attend summer schools at Queen's or the University of Toronto.

Government departments and agencies were competitive with business and industry for the best students in all faculties. Recruiting teams from some of these agencies and from the armed services visited the campus; a fairly large number of senior students sat for the Civil Service Career Examinations in November. There is a growing tendency in government recruiting in universities to stress the importance of honours degrees, particularly in the areas of pure and applied sciences. Indeed, certain agencies such as the National Research Council and others have reported the urgent need to encourage the top graduates at the Bachelor

level to continue their studies into graduate work. A total of 28 graduates accepted government appointments, some in research work.

Over the years, Carleton graduates have achieved a noteworthy reputation for continuing their studies in post-graduate and professional fields, and this year was no exception. Of the 40 students who plan to continue studies in post-graduate and professional areas, 15 received fellowships or assistantships. Graduates will pursue their studies in such institutions as Oxford, Cambridge, Duke, Purdue, Carnegie, Northwestern, Johns Hopkins', Queen's, Western Ontario, British Columbia, Saskatchewan. Several graduates will return to Carleton for courses in public administration, journalism, geology and economics. Fourteen students will attend Canadian universities to study law, medicine, social work and theology.

Summer employment prospects for undergraduates were dismal until the end of May. The only bright exceptions in this depressing situation were the geology and biology majors who received confirmation of summer appointments early in the spring. Senior civil engineers experienced some difficulty finding either summer or permanent employment until late May or June. However, this was not a local problem, as reports from across Canada indicated that the number of graduates in civil engineering exceeded the number of job opportunities. Strangely enough there were more summer jobs offered for women students than in previous years. Several Ottawa firms and businesses have employed students for summer jobs for the first time and the picture considerably improved after the first of June. Wages are comparatively low but students prefer to work on jobs offering a steady, if small, income rather than take a chance on sales jobs which pay on a commission basis only. The largest number of students were hired by the federal civil service and government corporations. An increasing number of male students have taken advantage of the Armed Services Training Plans (Active and Reserve) and their employment was assured.

Financial Aid to Students

During the academic year 1960-61 the amount of financial assistance to Carleton students showed a marked increase. A total of 590 awards or grants of one kind or another were received by some 421 day

students, 18 evening students, and 21 people enrolled in extension courses. The total disbursement, as far as our records indicate, was \$151,779 (an increase of \$47,393 over the previous year).

From funds at its disposal the University granted 400 awards totalling \$96,058: \$29,811 in scholarships, \$12,200 in teaching fellowships, \$24,251 in bursaries, \$28,606 in loans and \$1,190 in prizes. Another 190 awards amounting to \$55,721 were disbursed through other channels. Sixty-three people from this latter group received \$19,700 in scholarships, bursaries and loans administered by other organizations or agencies, but tenable at Carleton.

Government agencies (federal, provincial and foreign), local business firms, Y.M.C.A., and church organizations contributed to the financial aid program through the payment of tuition fees. They paid \$29,896 in fees for 68 full-time students, 29 part-time (evening) people, and 21 in extension courses. The largest group of sponsored students comprised 20 Colombo Plan Trainees from British West Indies, Africa and South-East Asia. There were two Commonwealth Scholars and one Canada Council Scholar. Eight students received education benefits through the Children of War Dead (Education Assistance) Act.

In the summer of 1960 there were 84 applications for the University's 19 entrance scholarships valued at \$15,950. Many good scholars had to be turned down but those in need of financial assistance were encouraged to apply for bursary aid. Nine freshmen students received Ontario Entrance Scholarships. Fifteen senior students received scholarships and fellowships in Public Administration.

During the year 154 students applied for bursary aid. Of this number, 59 were Grade 13 Ontario students who had applied for Atkinson Charitable Foundation Entrance Bursaries. (Eighteen met the requirements and received awards). The University Student-Aid Committee allocated \$19,326 in bursaries to 97 worthy candidates. Bursary recipients were selected on the basis of satisfactory academic standing and evidence of genuine financial need. The Ontario Department of Education awarded Dominion-Provincial Type "A" Bursaries to 21 Carleton freshmen and Type "B" Bursaries to 13 students in course. Four students from Quebec received bursary aid from their Department of Education.

The most striking development in the University Student-Aid program this year was the rather unexpected drain on the loan funds available to the student body. Seventy-five students applied for loans amounting to approximately \$27,000. The Loan Committee loaned \$26,255 to 73 of the applicants; two were not approved because of unsatisfactory academic standing. In 1959-60, 48 students had borrowed \$17,944. In the course of the year 115 students were granted small loans from the Small Loans Fund, which fills a need when a small amount is required to tide a student over unexpected emergencies or expenditures. In eight months \$2,351 was used for emergency loans. Fourteen students borrowed \$6,125 from the Ontario Department of Education Student Loan Fund.

The increasing use of loan funds by the students for educational costs appeared to indicate two pertinent trends in the field of student-aid. First of all, the University did not have sufficient funds to meet the number of applications for scholarships and bursaries. As previously indicated in this report, just 21 per cent of the applicants for entrance scholarships received awards. Through the use of stringent regulations and the paring of the amounts asked for, the Student-Aid Committee did manage to grant some bursary aid to all students who had better than average academic standing and were in genuine need of financial assistance. In order to make up the deficit in bursary aid many good students had to borrow money in order to continue their studies. Students with average academic standing could not get bursary aid but were aided by substantial loans.

The second noticeable trend was the change in attitude of students towards borrowing money in order to complete their education. A few years ago a student would apply for a loan only as a last resort and would do so reluctantly. Not too many required loans, as summer earnings were usually sufficient to see them through an academic year. If their savings ran out, good students could usually rely on bursary assistance. However, increasing costs of a university education, plus inadequate savings, have forced many students to take advantage of loan funds in order to continue their studies.

JEAN A. LOATES,
Student Personnel Officer

Athletics

The year 1960-61 will be remembered as a booster year for athletics at Carleton. Growth was evident in all aspects of the program.

The intramural athletics took on new life—participation and competition have never been keener. The number of activities was increased greatly which gave the program a broader appeal. It is usually believed that the health of an athletic program can be best judged by the state of the intramural sports; if this is so, Carleton's program is in good health. The greatest single need in this area is indoor facilities on campus.

On the intercollegiate level activity reached a new high. In the team sports hockey was reinstated and soccer added.

Carleton joined St. Patrick's College and Eastern Ontario Institute of Technology to form the Ottawa Intercollegiate Hockey League. In this competition the Ravens completed the schedule and play-off undefeated. Plans for next year include Carleton returning to Ottawa-St. Lawrence Intercollegiate Athletic Association hockey competition; it is hoped participation in the local league will continue.

Soccer was played at Carleton for the first time in 1960-61. The program was on a small scale, but it seems likely that the activity is now permanent. Four teams were formed which played among themselves and an "all star" team played the University of Ottawa in two exhibition games. The addition of this sport greatly increases the opportunity for our overseas students to participate in physical activity.

Interest in the individual type sports increased greatly. Cross-country and track and field showed significant growth in comparison to last year when the activities were initiated.

Carleton competed in tennis after a year's absence; the team showed very well in conference competition by finishing a very close second to Loyola College of Montreal. All of this year's team return next year which should mean another good season.

In those sports which have been sponsored regularly improvement was evident. The football team won two games after a winless season

the previous year. A pre-season training camp helped greatly to boost spirit and performance. A novel aspect of the camp was that the players covered a major portion of the expense by working two hours a day during the camp. The basketball team finished second in the Western section of the O.S.L.I.A.A. This was done with a team composed primarily of new students; with the majority of the team returning next year the future looks bright. The ski team won the conference title for the second consecutive year. In addition, its performance was outstanding in two other meets in which top intercollegiate teams from Canada and the United States competed.

The women's basketball team focused on intercollegiate competition this year. It was felt that playing in the city league and intercollegiate competition was too much and that more could be gained by increasing the number of intercollegiate games. Therefore, games were scheduled with McGill, Macdonald and Sir George Williams. The highlight of the year came in the annual Stewart League Tournament when Carleton shared the championship with McMaster University. This was the best showing the team has made in this event.

The recreational athletic program was strongly supported during 1960-61. The perennial favourites, Mountain Day, square dances and the ski school were among the activities. The ski school was so popular that additional sessions were added.

The ninth annual Carleton Invitational Basketball Tournament was rated a success. For the third consecutive year the championship was won by a local school; Fisher Park High School defeated Sheridan Tech of Sudbury, winners of three previous tournaments, in the finals to take the title.

For the past two years both the director and assistant director have had responsibilities not concerned with athletics. This situation made it difficult to meet the needs of a rapidly growing program. A major administrative change will be in effect next year. Mr. Keith Harris will have the directorship of athletics as his entire responsibility. This will mean that one person can give athletics his undivided attention, a minimal requirement for such a complex and demanding aspect of university life.

NORMAN D. FENN,
Director of Athletics

Student Activities

In many respects, it was during the past year that the spirit of the new Carleton was formed. It is a spirit which has maintained many rich traditions of the "old place" and yet it is one which has built anew on these for the future. A change in the structure of student government and a renewed enthusiasm behind all student activities were developed during the year 1960-61.

The major constitutional amendment of the 1959-60 Students' Council resulted in the formation of the Representative Assembly. This is a body of students made up of representatives of the various faculty and interest groups to give a broader and more equitable representation to the administration of campus affairs. Its duties are to be the advisory body for Council and to prepare and present briefs to the Council on committee proposals, group projects, extracurricular activities, and student government policy. It is also responsible for the collection and dissemination to the Council and the students of the reports of such committees as are under its jurisdiction. The Council acts in an executive capacity whereas the Assembly serves as a legislative body. During the past year, the amendment became a successful reality. Although the Assembly has not reached its full potential, its significance and strength will become greater in the coming years. It has played and will continue to play a very real part in the communication, co-ordination and force of all student activities.

Other changes came with this one. Significant was the establishment of the position of administrative assistant. The duties of this councillor are to act as a liaison between the Assembly and the Council and to be the unofficial liaison with University officers. This latter duty in particular is becoming increasingly more important because the student president has less time now for the necessary meetings with the staff.

The Council acquired the services of a Carleton graduate for legal consultation. His advice was most helpful for a couple of contracts.

I think it is worth mentioning here that the Students' Association has liquidated all its debts and has shown a small surplus for the first time in three years.

A constitutional amendment has changed clubs policy for the future. The new system will govern the entire student program and not just club activity. This is meant to lead towards the formation of a union program.

Because he is supposed to represent the whole student body, the chairman of the local committee for the National Federation of Canadian University Students was elected by all the members of the Students' Association for the first time this year. He was previously appointed by the committee itself.

A record number of registered clubs resulted in an increased clubs program this year. On and off campus the various clubs were very active. The United Nations Club in particular is to be congratulated for its successful sponsorship of an Ontario regional conference, and the Model General Assembly for high school students.

Student publications were again a success. *The Carleton*, *The Raven*, and the Central Advertising Bureau were particularly well handled. The *Student Handbook* was not published this year because of printing difficulties.

There has been a great deal of participation in inter-university conferences by Carleton students. Carleton sent delegates to the NFCUS conference at Dalhousie and Ottawa universities; the World University Service of Canada conferences at Queen's and the University of Western Ontario; the conference of world affairs at McGill; the conference on Commonwealth affairs at the University of Manitoba; a drama festival at the University of Western Ontario; a conference on night student government at Sir George Williams; Canterbury and Newman conferences at the University of Manitoba; and various political club conferences and debating competitions.

The honour system, the basis of student discipline at Carleton, had its first real test this year. It presented many difficulties. However, the experience gained this year has been useful in making the necessary improvements in this area for the future.

The Students' Association, in co-operation with the staff, organized the student canvass for the Carleton University Development Campaign during the year. Although the total amount collected was insignificant to the whole needed, the percentage response of the students was encouraging.

Possibly the most exciting thing which happened this year was the initiative the students showed in planning a university centre to house gymnasium and union facilities. When the students realized they would not be able to get a significant increase in union facilities by the fall of 1962, they decided to explore the various ways by which they could overcome a rapidly growing need—a need for a centre of student activity. Three main areas were studied, two of which proved unsatisfactory. The final plan became the subject of much controversy and debate which served to bring to the student body the realization of some of its own needs and responsibilities. This plan finally received strong approval when voted upon in a referendum. Very briefly, the students have pledged themselves to a special fee to pay for at least half the capital and maintenance costs of this new building which will be completed, it is hoped, by the fall of 1962. A board of directors already has been set up to manage the affairs of this new centre.

I would at this opportunity like to express the sincere appreciation of the Students' Association to all members of the faculty and administrative staff for their co-operation, guidance, understanding, and patience.

JAMES REED,
President, Students' Council, 1960-61

Student Affairs

Carleton was faced this year with a 35 per cent increase in student population. Though welcomed, this sudden increase created many complications. It was soon apparent that the new facilities would be put to maximal use. Study space, eating facilities barely met the demand; the extra-curricular areas were inadequate. 1960-61 increased the sense of urgency in our planning for future growth.

Becoming of greater importance as the student population grows is the orientation program for incoming students. This program has been in operation at Carleton for many years. Initially, it consisted of several early morning lectures on various aspects of university life. The program has grown considerably over the years and it now runs throughout the week preceding classes. This year a new approach was taken. A committee composed of students worked with the Student Affairs Adviser during the summer months planning and organizing the entire program. It was felt that in this way the needs of new students might be better met. One project of this body was *The Compass*, a pamphlet containing information important to the new student. It was produced and sent to all incoming students in advance of orientation. Another innovation was an all-day workshop for those senior students who were to serve as group leaders during that week.

Carleton's out-of-town student population is now 36 per cent of the total group. This has emphasized the need for residence halls and a new eating centre. From the beginning, all planning in this area has been based on the belief that these facilities should provide the student with more than food and shelter. With proper planning, residence hall life should contribute to the educational experience of the students. Carleton has no background or experience with on-campus residence; therefore, much research and study have gone into the plans of this

first unit. In fact, a committee composed of academic, administrative, and student representatives has been working three years on this project. There is still much to be done before students move in, but the construction of these buildings is due to begin this summer.

It was mentioned earlier that the facilities for extra-curricular activities were inadequate to meet the demands of a growing student body. Steps were taken this year to accelerate the construction of a University Centre. The student body agreed to increase the student activity fee by \$10.00 as its share in making this project possible. The administration in turn has agreed to share on a fifty-fifty basis the capital and maintenance cost of the building. A University Centre Board composed of staff and students has been meeting during the year for the purpose of planning and formulating policy for the new Centre. It is hoped the building will be ready for occupancy in the fall of 1962.

NORMAN D. FENN
Student Affairs Adviser

II: FACULTY ACTIVITIES

APPOINTMENTS

To Co-ordinator of Construction

G. Ross Love, M.A. (Western Ontario), Ph.D. (Toronto), Associate Professor of Physics

NEW APPOINTMENTS

Associate Professors

Paul R. Beesack, B.A. (McMaster), A.M., Ph.D. (Washington)—Mathematics

William H. Bowes, Dip.Eng. (Dalhousie), B.Eng., M.Eng. (Nova Scotia Tech.), M.Sc. (Michigan)—Engineering

Assistant Professors

J. E. Blais, B.A. (Laval), Lic.ès.L., M.A. (Montreal), Dip.d'ét.sup. (Sorbonne)—French

M. Nancy Donald, M.A., Dip.Educ. (New Zealand), Ph.D. (Michigan)—Psychology

Malcolm A. Gullen, B.Sc. (Edinburgh), M.S. (Purdue)—Engineering

A. Trevor Hodge, M.A., Ph.D. (Cambridge)—Classics

Lecturers

Eugene A. Cherniak, M.A. (Queen's), Ph.D. (Leeds)—Chemistry

Benjamin W. Jones, B.A. (Grinnell), M.A., Ph.D. (Iowa)—English

Isabel S. Macquarrie, B.A. (Manitoba), A.M. (Washington)—Mathematics

Karl Van Dalen, B.Sc. (Queen's), D.I.C., M.Sc. (London)—Engineering

Katherine E. Young, B.A. (McGill and Oxford)—English

Visiting Professors

B. Keith-Lucas, M.A. (Cambridge)—Political Science

John Knapp, M.A. (Cambridge and Oxford)—Economics

M. Pierre Mélése, D.ès L. (Sorbonne), Chevalier de la Legion
d'Honneur—French

Special Lecturer

J. H. Scarffe, B.A. (McMaster), M.A. (Toronto)—Public Adminis-
tration

Administrative Appointments

Shirley M. Gillespie, B.J. (Carleton)—Alumni Secretary

Douglas J. H. Horan, B.J. (Carleton)—Information Officer

PROMOTIONS

From Associate Professor to Professor

John Ruptash—Engineering

From Assistant Professor to Associate Professor

F. Ellenor M. Swallow—Classics

From Lecturer to Assistant Professor

Kenneth Hooper—Geology

William Tupper—Geology

ADMINISTRATIVE CHANGES

John Hart, Associate Professor of Physics—to Chairman of the
Department, 1960-61

George B. Johnston, Associate Professor of English—to Acting
Chairman of the Department, 1960-61

Paul M. Laughton, Associate Professor of Chemistry—to Acting
Chairman of the Department, 1960-61

LEAVES OF ABSENCE

A. M. Beattie, Professor of English—for study in England

T. N. Brewis, Associate Professor of Economics—for study in Eng-
land

- D. M. L. Farr, Associate Professor of History—to accept visiting associate professorship at Duke University (first term only)
- C. P. Fleischauer, Assistant Professor of French—for study in France
- P. A. Hill, Assistant Professor of Geology—to continue as visiting lecturer at University of Tasmania
- J. M. Holmes, Associate Professor of Chemistry—for study and research at the University of Washington, Seattle
- D. C. Rowat, Professor of Political Science—to study government systems of western Europe

RESIGNATIONS

- Rene Bismuth, Assistant Professor of French
- A. H. Lightstone, Assistant Professor of Mathematics
- Dalton H. Minty, Assistant Professor of Engineering
- R. J. Semple, Assistant Professor of Mathematics
- P. L. Smith, Lecturer in Classics
- D. S. Swain, Development Officer

Research

D. G. ANGLIN (Political Science)

Canada and the middle powers: the relationship of great and small states in international organization, 1939-1950.

The St. Pierre and Miquelon *Affaire* of 1941: a study in North Atlantic diplomacy.

Foreign relations of African states.

I. BAYLY (Biology)

Successions in newly flooded lands.

Cytological effects of centrifugal force on living organisms.

P. R. BEESACK (Mathematics)

Linear differential equations in the real domain: continuation of a study of eigenvalue problems and related integral inequalities.

Second-order linear differential equations in the complex domain: investigation of the univalence and mapping properties of solutions.

J. E. BLAIS (French)

Critical essay on the writings and theories of the Canadian painter, Borduas.

E. A. CHERNIAK (Chemistry)

Microwave structure determination.

Mechanism and intermediates in gamma-radiolysis of liquids.

T. J. S. COLE (Physics)

Mass spectrometry of sulphur isotopes.

Ultra high vacuum mass spectrometry of small gas samples from ancient sedimentary material.

G. S. COUSE (History)

Doctoral dissertation for the University of Chicago, "Historicism in the Doctrinaires".

WILFRID EGGLESTON (Journalism)

Preparation of a history of the national capital of Canada, commissioned by the National Capital Commission.

Preparation of a group of 49 biographies of contemporary Canadians, for the Grolier Society, New York.

H. E. ENGLISH (Economics)

The relation between the structure and behaviour of selected Canadian manufacturing industries and import competition within the context of Canadian commercial policy.

M. C. FRUMHARTZ (Sociology)

Voting behaviour in Canada, 1945-58.

The effects of television broadcasting on politics.

The public image of labour unions in Canada.

J. G. GARRARD (Russian)

A chrestomathy of Russian literary prose from the latter half of the 18th century to the present day.

J. A. GIBSON (History)

Study of the literary, philological, and artistic work of Sir Edmund Walker Head, Bart. (1805-1868).

Study of the nature of Canadian federalism.

Research on penal transportation from Canada, 1838-40.

JOHN HART (Physics)

Electrical properties of ceramics at high temperatures.

The viscoelectric effect; electrode polarization effects.

A. T. HODGE (Classics)

Western Greek building technique.

W. I. ILLMAN (Biology)

Comparative studies on germination of spores of Anthracnose fungi.

PAULINE JEWETT (Political Science)

Voting study.

G. B. JOHNSTON (English)

Translations of the *Bandamanna Saga* and the *Faereyinga Saga*.

S. F. KALISKI (Economics)

The relation between wages and unemployment in Canada.

W. H. KESTERTON (Journalism)

History of Canadian journalism from 1752 to the present.

JOHN KNAPP (Economics)

Keynesian growth theory.

United Kingdom growth—experience since World War II, in the light of historical experience.

P. M. LAUGHTON (Chemistry)

Solubility and solvolysis in light and heavy water.

Sulfonic esters of mercaptoalkanols.

Forced Claisen condensations.

R. O. MACFARLANE (Political Science)

Administration of educational services of the federal government—a project study for the Royal Commission on Government Organization.

K. D. McRAE (Political Science)

The boundary between individual freedom and social control in contemporary Western societies.

A study of Canadian dualism.

Studies on the personnel of Canadian Cabinets (in collaboration with students).

M. P. MÉLÈSE (French)

Edition of the Journal of De Tralage (about 1690).

G. C. MERRILL (Geography)

17th century fishing villages of Newfoundland.

Historical geography of the West Indies and British Guinea.

- J. S. MOIR (History)
A biography of Lord Sydenham.
History of the Royal Canadian Corps of Signals.
- J. M. MORTON (Chemistry)
Exchange reactions with rare earth chelate complexes.
Determination of oxygen and nitrogen in metals by isotopic dilution.
- A. M. MUNN (Physics)
Psychophysics.
- H. H. J. NESBITT (Biology)
Studies on the relationships and affinities of the animals of the phyla Aracnida, and in particular the members of the order Acari.
Neurological studies of the brain and nervous system of the lower Hexapoda.
- F. H. NORTHOVER (Mathematics)
Classical diffraction problems.
Studies on tropospheric radio and ionospheric radio propagation.
Image formation in microwave systems.
- JOHN PORTER (Sociology)
Elites, power, and social classes in Canada.
- R. PUTNAERGLIS (Engineering)
Heat transfer across metal interfaces; electrical resistance of interfaces.
- L. M. READ (Religion)
Hegel's interpretation of Christian doctrine.
- J. E. RIDDELL (Geology)
Studies on cation migrations in natural solutions.
Distribution of copper in soils of Allumette Island.
General studies of distribution of heavy metals in glacial soils of Canada.
- MARCEL RIOUX (Sociology)
World view and value-orientations of the French Canadians.

JOHN RUPTASH (Engineering)

Preparation of a manuscript on advanced fluid dynamics.

D. A. SMITH (Biology)

The taxonomy, distribution and ecology of deermice (*Peromyscus*) in Ontario.

Study of the ectoparasites of small mammals.

Study of growth of the varying lemmings (*Dicrostonyx*).

R. S. TALMAGE (Philosophy)

Research on grammatical categories.

J. S. TASSIE (French)

Investigations of grammatical features of French Canadian speech and related dialects of France.

J. M. THOMPSON (Philosophy)

Doctoral dissertation for the University of Aberdeen on the concept of symbol.

W. M. TUPPER (Geology)

Thermodynamic and physical aspects of isotope fractionation.

The absolute geologic age of the Highlands of New Brunswick.

A detailed sulphur isotopic study of Brunswick No. 6, and the Nigadoo deposits, Bathurst, N.B.

Brucite occurrences in Nova Scotia.

BERNARD WAND (Philosophy)

Freedom in various contexts.

R. A. WENDT (Psychology)

The effect of low intensity stimulation on learning.

Partial reinforcement effects using knowledge of results with human subjects.

J. C. S. WERNHAM (Philosophy)

Preparation of a book on N. Berdyaev and L. Shestov.

FRANK WIGHTMAN (Biology)

The metabolism of tryptophan in various plants in relation to the biosynthesis of the naturally occurring plant growth hormone, 3-indoleacetic acid.

The translocation and metabolism in crop and weed plants of certain synthetic growth-promoting substances with herbicidal activity.

D. R. WILES

Dissolution chemistry of copper.

Nuclear recoil processes in solids.

WHITMAN WRIGHT (Engineering)

Investigation of the flow and fracture of semi-brittle metallic materials.

W. L. YOUNG (Geology)

Lithological study of Precambrian conglomerate formations.

Tin-tungsten-molybdenum mineralization in the Mount Pleasant area, N.B.

Publications by members of the staff during the academic year 1960-61 or during the period of their connection with Carleton University if not previously reported.

Publications

D. G. ANGLIN

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"Towards a Canadian Policy on Africa", *International Journal*, Vol. 15, 1960, pp. 290-310.

"United States Opposition to Canadian Membership in the Pan American Union: A Canadian View", *International Organization*, Vol. 15, 1961, pp. 1-20.

I. BAYLY

"Water Pollution and its Impact on the Province of Ontario", *Bulletin of Conservation Council of Ontario*, January, 1961, pp. 12-14.

P. R. BEESACK

"Linear Differential Equations and Convex Mappings", *Duke Mathematical Journal*, Vol. 27, 1960, pp. 483-495.

"Modern Mathematics—its Evolution, Logical Structure, and Subject Matter", *New Thinking in School Mathematics*, Canadian Teachers' Federation, Ottawa, 1961, pp. 71-82.

WILFRID EGGLESTON

"Introduction", *Mirror of Canada*, Ryerson Press for the Royal Canadian Geographical Society, 1960.

H. E. ENGLISH

Canadian Economic Policy, Macmillan, 1961, (with T. N. Brewis, Anthony Scott, and Pauline Jewett), 365 pp.

"Brief on Amendments to the Combines Investigation Act (Bill C-58)", *Canada, House of Commons, Standing Committee on Banking and Commerce, Minutes of Proceedings and Evidence, No. 8*, Ottawa, 5 July, 1960.

J. A. GIBSON

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"The Shape of Universities to Come", *School Progress in Canada*, Vol. 29, No. 4, May, 1960, pp. 34-36.

M. A. GULLEN

"A Graphical Method of Determining VHF Transistor Stability", *Canadian Electronics Engineering*, Vol. 4, No. 11, November, 1960, pp. 44-47 (with H. H. Schwartz).

"Hybrid Parameter in Current Gain versus Load Calculations", *Ibid*, Vol. 5, No. 2, February, 1961, pp. 48-49, 54.

JOHN HART

"Molecular and Ionic Interactions in Dielectrics", *Digest of Literature on Dielectrics*, Vol. 23, 1960, Chap. 3, pp. 69-99, (with A. M. Parks and M. O. Poirier).

Editor (with J. B. Birks)—*Progress in Dielectrics*, Vol. 3, Heywood & Co., 1961, vii, 292 pp.

"Letter on Education to the Public", *Science*, Vol. 133, 1961, pp. 1938, 1940.

A. T. HODGE

The Woodwork of Greek Roofs, Cambridge University Press, 1960, 149 pp.

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S. F. KALISKI

"Some recent estimates of the elasticity of demand for British exports", *Manchester School of Economic and Social Studies*, Vol. 29, No. 1, January, 1961, pp. 23-42.

B. KEITH-LUCAS

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"Changing Africa", *Canadian Geographical Journal*, May, 1961, pp. 162-177.

The Mayor, Aldermen and Councillors, Unservile State Papers, No. 3, Unservile State Group, London, 1961, 14 pp.

W. H. KESTERTON

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"Thomas Chandler Haliburton", *Encyclopaedia Britannica*, New Edition, Vol. 11, p. 93.

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K. D. McRAE

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S. R. MEALING

"L'Angleterre de 1760 et son influence sur le Canada", *La Revue de l'Université Laval*, Vol. 15, No. 7, March, 1961, pp. 611-615.

G. C. MERRILL

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J. S. MOIR

"Ontario", *Collier's Encyclopedia Yearbook 1961*, pp. 450-452.

A. M. MUNN

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H. H. J. NESBITT

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"Sarcoptiformes", *Encyclopedia of Science and Technology*, McGraw-Hill, 1960, pp. 29-30.

F. H. NORTHOVER

"The effect of multiple atmospheric inversions on tropospheric radio propagation", *Journal of Atmospheric and Terrestrial Physics*, Vol. 20, 1961, pp. 295-296.

JOHN PORTER

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"Power and Freedom in Canadian Democracy" and "Social Class and Education", in M. K. Oliver, ed., *Social Purpose*, University of Toronto Press, 1961, pp. 27-56, 104-130.

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J. E. RIDDELL

"Geochemical Prospecting Methods Employed in Canada's Glaciated Precambrian Terrains", *Mining Engineering*, November, 1960, pp. 1170-1172.

"Geochemical Techniques—a Review", *Canadian Mining and Metallurgical Bulletin*, October, 1960, pp. 765-767.

"Geochemical Prospecting", *Encyclopedia of Science and Technology*, Vol. 6, McGraw-Hill, 1960, pp. 115-118.

MARCEL RIOUX

"Visions tragiques et optimistes de l'histoire", *Ecrits du Canada français*, Vol. 8, Montreal, 1961, pp. 234-257.

"Anthropologie contemporaine", *Liberté*, Vol. 14, Montreal, 1961, pp. 492-495.

"Kinship Recognition and Urbanization in French Canada", *National Museum of Canada Bulletin*, No. 173, Series No. 50, 1961, 11 pp.

JOHN RUPTASH

Report on the School of Engineering, Carleton University, February, 1961, 597 pp.

J. S. TASSIE

"The Use of Sacrilege in the Speech of French Canada", *American Speech*, Vol. 36, No. 1, February, 1961, pp. 34-40.

W. M. TUPPER

"Sulphur Isotopes and the Origin of the Sulphide Deposits of the Bathurst-Newcastle Area of Northern New Brunswick", *Economic Geology*, Vol. 55, No. 8, December, 1960, p. 1676-1707.

F. R. WAKE

"A Fifteen Year Review of Canadian Trained Psychologists", *Canadian Psychologist*, October, 1960, pp. 123-130, (with H. Döörken and C. B. Walker).

BERNARD WAND

"Evolution and the Basis of Moral Principles", *Darwin in Retrospect*, Ryerson Press, 1960, pp. 35-47.

R. A. WENDT

"Retest Gains and Intelligence Tests", *Canadian Psychologist*, Vol. 2, 1961, p. 20-25.

J. C. S. WERNHAM

"The Religious Controversy", *Darwin in Retrospect*, Ryerson Press, 1960, pp. 17-34.

FRANK WIGHTMAN

"Chromatographic Investigations on the Metabolism of Certain Indole Acids and their Amides, Nitriles and Methylesters in Wheat and Pea Tissues", *Plant Growth Regulation*, Iowa State Press, 1961, pp. 71-94, (with C. H. Fawcett and R. L. Wain).

Honours and Activities

D. G. ANGLIN

Member, advisory board, African Students Foundation.

Member, executive committee, Ottawa men's branch, Canadian Institute of International Affairs.

Member, advisory council, Ottawa branch, United Nations Association of Canada.

Chairman, committee on university government, Canadian Association of University Teachers.

P. R. BEESACK

Carleton representative, Ontario Mathematics Commission, and member, writing committee.

J. E. BLAIS

Literary critic for *Le Devoir*.

W. H. BOWES

Consultant to Atomic Energy of Canada Limited, with respect to stress analysis of new concepts in nuclear power plant equipment.

T. J. S. COLE

Awarded Ph.D. degree, University of Cambridge, June, 1961.

G. S. COUSE

Awarded Canada Council pre-doctoral fellowship for 1961-62.

A. D. DUNTON

Chairman, session on "Power Relationships in the Americas", Couchiching conference on *The Latin Americas*, 11 August, 1960.

Host, CBC television series, *Inquiry*, December 1960 to May 1961.

Chairman, special conference committee, National Conference of Canadian Universities and Colleges.

Member, panel of judges, Bowater Awards for Journalism for 1960.

WILFRID EGGLESTON

Special lecturer in Canadian letters, Banff School of Fine Arts, July, 1960.

Re-elected vice-president, Canadian Writers Foundation.

Re-elected to board of trustees, The Canada Foundation.

Re-elected to editorial board, Royal Canadian Geographical Society.

Secretary-treasurer, Canadian committee, International Press Institute.

H. E. ENGLISH

Member, executive council, Canadian Political Science Association.

Member, Institute for Economic Research, Queen's University, June to August, 1960.

D. M. L. FARR

Visiting associate professor, Duke University, fall term, 1960.

Member of council, Canadian Historical Association, 1959-62.

Member, public records committee, Public Archives of Canada.

J. G. GARRARD

Awarded Canada Council pre-doctoral fellowship for work at Lomonosov University of Moscow.

Member, committee on introduction of Russian and other Slav languages into schools, Canadian Association of Slavists.

A. C. GHOSH

Awarded Ph.D., McGill University, May, 1961.

Member, Institution of Nuclear Engineers, 1960; and foreign editor, *Journal of Nuclear Energy*.

J. A. GIBSON

Awarded Canada Council research grant, summer, 1960, for research in France and England.

Member, committee on grade 13 examinations, University Matriculation Board; also of continuing committee.

Member, selection committee, Queen Elizabeth II Ontario Scholarships.

Elected president, Canadian Writers Foundation, Inc.

Canadian delegate, assembly of World University Service, Tutzing, Germany, August, 1960; re-elected senior member of assembly; re-elected chairman, national committee, World University Service of Canada.

H. G. GIFFORD

President, Library Association of Ottawa; chairman, committee on subject directory of libraries in Ottawa.

Chairman, Canadian copyright committee, Canadian Library Association.

E. E. GOLDSMITH

Secretary, committee on shunt power capacitors, Canadian Standards Association.

Canadian delegate, 26th general meeting, International Electrotechnical Commission, Interlaken, June, 1961.

British Council Visitor to British universities and laboratories, June, 1961.

JOHN HART

Chairman, committee on electrical insulation, Canadian Standards Association.

Chairman, committee on electrical insulation, National Research Council.

Member, Canadian committee TC-15, International Electrotechnical Commission.

Member of council, Canadian Association of Physicists; and of industrial physics committee.

Member, committee on education, Electrical Insulation Conference.

W. I. ILLMAN

Awarded Ph.D. degree, University of Western Ontario, May, 1961.

Vice chairman, Ottawa Valley section, Canadian Society of Microbiologists.

PAULINE JEWETT

Elected member, national executive, Canadian Association of Consumers.

S. F. KALISKI

Member, Institute for Economic Research, Queen's University, summer 1960 and 1961.

W. H. KESTERTON

Member, Canada Foundation assessment committee, Canada Council journalist-broadcaster-film maker scholarships.

"Resource person" to provide historical and other background material to Royal Commission on Publications.

P. M. LAUGHTON

Re-appointed delegate, Ontario provincial branch committee, Chemical Institute of Canada.

Member, committee on program and uniform, Boy Scouts of Canada. Consultant, School of Instructional Technique, RCAF, Trenton.

J. A. LOATES

Secretary-treasurer, University Counselling and Placement Association.

Member, board of directors, Ottawa Personnel and Guidance Association.

R. O. MACFARLANE

Member, Canadian staff, 11th International Seminar of World University Service, The Hebrew University, Jerusalem, Israel, July to August, 1960.

Co-director, Senior Officers Course, Civil Service Commission, August to September, 1960.

Vice chairman, editorial committee, Royal Canadian Geographical Society.

Project director, Educational Services, Royal Commission on Government Organization.

M. S. MACPHAIL

Secretary, mathematics subject-division, Royal Society of Canada.

R. L. McDUGALL

Chairman, chapel restoration committee, All Saints Anglican Church.

J. A. B. McLEISH

Elected president, Ottawa branch, United Nations Association in Canada.

Re-elected vice-president, Ottawa YMCA; chairman, guidance committee.

Re-elected member, national council, Canadian Association of Extension and Summer Schools.

Re-elected member, board of governors, Elmwood School.

S. R. MEALING

Editor, historical booklets series, Canadian Historical Association.

Editor, Canadian Association of University Teachers *Bulletin*.

G. C. MERRILL

Carleton delegate, National Educational Television Conference, University of Toronto, 23-26 May, 1961.

J. S. MOIR

Editor, *Ontario History*.

F. H. NORTHOVER

Special consultant in applied mathematics to the Defence Research Board.

Member, Canadian commission II, Union Radio Scientifique Internationale.

Chairman, steering committee on applied mathematics, Canadian Mathematical Congress.

JOHN PORTER

Awarded Canada Council Post-doctoral fellowship during 1961-62 for research on elites, power, and social classes in Canada.

J. E. RIDDELL

Chairman, Ottawa Geochemical Discussion Group.

Chairman, projects committee, Geological Association of Canada.

Member, committee on oceanography, Royal Society of Canada.

JOHN RUPTASH

Member, review committee on National Aeronautical Establishment, National Research Council; and scholarship selection committee. Chairman, session of annual conference, Canadian Operational Research Society, May, 1961.

D. A. SMITH

Lecturer in animal ecology, workshop program, Ottawa Field-Naturalists' Club, December 1960 to April 1961.

J. S. TASSIE

Member, Supervising Board, Ontario Department of Education.

R. A. WENDT

Chairman, advisory committee on selection and training problems, Defence Research Board.

Consultant to Psychiatric Research Unit, Defence Research Board.

FRANK WIGHTMAN

Organizing secretary, 1961 conference, Canadian Society of Plant Physiologists, Carleton University, 24-26 May, 1961.

D. R. WILES

Member, executive committee, Ottawa section, Chemical Institute of Canada; and chairman, membership committee.

Public addresses given to audiences other than those making up official courses at the University.

Public Addresses

D. G. ANGLIN

"Is the United Nations Meeting its Objectives?", U.N. Seminar on the Teaching of International Relations, Carleton University, 4 July, 1960.

"Chaos in Laos", CBC radio *Weekend Review*, 8 January, 1961.

"Portugal and Portugese Africa", CBC radio *Weekend Review*, 29 January, 1961.

"Africa in World Affairs", RCMP training course, Rockcliffe, 29 January, 1961.

"Political Aspects of the Control of Nuclear Weapons", lecture in extension series, *Nuclear Radiation and Fallout*, Carleton University, 14 February, 1961.

"University Government", Queen's University Faculty Association, 23 February, 1961.

"Africa: the Aftermath of Independence", lecture in Carleton University extension series, Carleton Place, 15 March, 1961.

"Crisis in Southern Africa", United Church Ministerial Association, Ottawa, 29 May, 1961.

"The Organization of American States", RCAF Staff College, Toronto, 7 June, 1961.

"Problems of Canadian Independence: Foreign Policy", annual study conference, Canadian Institute of International Affairs, Sir George Williams University, 11 June, 1961.

I. BAYLY

"Plant Successions in the Flooded Areas of Lake St. Lawrence", 15th technical sessions, advisory committee on fisheries and wildlife research, Ontario Research Foundation, Guelph, March, 1961.

P. R. BEESACK

"Finite Fourier Series", seminar in mathematics, Ontario secondary school leaders in International Mathematics Contest, Queen's University, 6 April, 1961.

J. E. BLAIS

"Canadian Culture", Alliance Canadienne, Ottawa, November, 1960.
"Baudelaire, Critique de Delacroix", Ecole d'Architecture, Montreal, June, 1961.

W. H. BOWES

"Development of Nuclear Power in Canada", Institute of Radio Engineers, University of Ottawa, 2 November, 1961.

E. A. CHERNIAK

"Radiation Chemistry of Benzene", Journal Club, Division of Pure Chemistry, National Research Council, 23 March, 1961.

G. S. COUSE

"François Guizot: Statesman and Historian", lecture in extension series, *Historians at Work*, Carleton University, 25 January; Archives History Club of Ottawa, 27 March, 1961.

A. D. DUNTON

"Canada and the Arts", International Conference of Composers, Stratford, 7 August, 1960.

"Education in a New Age", annual meeting, Patent and Trademark Institute of Canada, 30 September, 1960.

"The Spectrum of Canadian Science", symposium, Canadian Association for Applied Spectroscopy, 4 October, 1960.

"Canadian Education in the 1960's", annual meeting, Quebec Association of Protestant School Boards, St. Eustache, 14 October, 1960.

"Who Should Go to University, and Why?", Vancouver Institute, 3 December, 1960.

"Science and Education in the 1960's", National Research Council group, Professional Institute of the Public Service, 7 December, 1960.

"Canadian Education in the Explosion of Knowledge", annual meeting, Manitoba Teachers' Society, 3 April, 1961.

WILFRID EGGLESTON

"Recollections of a Journalist", Men's Association, St. John's Church, Ottawa, 20 April, 1961.

"Some Reflections on Canada's Future", Canadian Progress Club, 23 May, 1961.

D. M. L. FARR

"Canada: the Elements of Survival", Trinity College Historical Society, Duke University, North Carolina, 3 November, 1960; History Club, University of Ottawa, 7 March, 1961.

"Canadian Liberal Nationalism and the Commonwealth", graduate seminar in political science, Duke University, 11 November, 1960.

"Historical Perspectives in Canadian-American Relations", 2nd annual management seminar in Canadian-United States Studies, Goddard College, Vermont, 16 January, 1961.

"Changing Views of Imperialism in Late 19th Century Britain", professional development group (history), Ottawa branch, Ontario Secondary School Teachers Federation, 30 May, 1961.

J. G. GARRARD

"The Teaching of Applied Russian: Some Suggestions", annual meeting, Canadian Association of Slavists, Montreal, 13 June, 1961.

A. C. GHOSH

"Four New Isomers", annual meeting, Canadian Association of Physicists, Montreal, June, 1961.

J. A. GIBSON

"The Passion Play at Oberammergau", Unitarian Church of Ottawa, 2 October, 1960.

"A Canadian Looks at the Commonwealth", Overseas Friendship Society of Canada, 20 November, 1960.

"Transportation for Life, 1838-39: the Canadian Scene" and "Sir John Franklin and Canadian Affairs", in the extension series, *Historians at Work*, Carleton University, 11 and 18 January, 1961.

"Transportation from Canada, 1838-39", YMCA Friday Discussion Club, 20 January, 1961.

"Education: the Reflected Light", Ottawa group, Liberal Religious Youth, 5 February, 1961.

"Higher Education in the 1960's", Aylmer Home and School Association, 30 May, 1961.

"Canadian Foreign Policy: Springs and Influences", National Defence College, Kingston, 15 June, 1961.

JOHN HART

"Some Problems in Modern Technology", Perth Canadian Club, 24 November, 1960.

"Some Radiation Problems", Voice of Women, 23 February, 1961.

"Nuclear Radiation and Fallout", series of five television programs, CBOT, April, 1961, (with Dr. G. R. Love).

"Modern Technological Education", Men's Club, Dominion United Church, 14 April, 1961.

"Recent Progress in Dielectrics", annual meeting, Royal Society of Canada, Montreal, June, 1961.

M. S. HORNYANSKY

"Critically Speaking about Summer Television Programs", CBC radio, 22 July, 1960.

"Teaching English Literature", Carleton County Men Teacher's Association, 3 December, 1960.

"Personally Speaking on Ethnic Groups", CBC radio, 25 January, 1961.

"Criticism", two television programs on CBOT series, *Live and Learn*, May and June, 1961 (with G. J. Wood).

G. B. JOHNSTON

Poetry readings, Hamilton Humanities Association, 16 December; Contact Poetry Readings, Toronto, 17 December, 1960.

"Norse Poems", Ottawa Humanities Association, February, 1961.

B. KEITH-LUCAS

"Town Planning", Queen's University, 11 November, 1960.

"Local Government in Africa", Queen's University, 11 November; McGill University, 21 November, 1960; Dalhousie University, 1 March, 1961.

"Administrative Tribunals", McGill University, 22 November, 1960; Manitoba Bar Association, 24 March, 1961.

"Sierra Leone: Problems of Independence", lecture in series, *Africa: The Political Pattern*", Carleton University, 6 December, 1960.

"Problems of Public Administration in Africa", Ottawa regional group, Institute of Public Administration of Canada, 13 December, 1960.

"The Royal Commission on the Government of Greater London", Syracuse University, 9 January, 1961.

"Democracy in Africa", University of Western Ontario, 22 February; University of Toronto, 24 February; University of Manitoba, 23 March, 1961.

"Town Planning and Compensation", University of Western Ontario, 23 February; Manitoba Law School, 24 March, 1961.

"Elections in Africa", Halifax branch, Canadian Institute of International Affairs, 28 February; Mount Allison University, 2 March; University of Alberta (Calgary), 21 March, 1961.

"British Colonial Africa", Dalhousie University, 1 March, 1961.

"Local Conditions in Africa", Mount Allison University, 2 March, 1961.

"English Local Government", University of New Brunswick, 3 March, 1961.

"Local Government in Canada and England", Ottawa Kiwanis Club, 17 March, 1961.

"Sierra Leone", Calgary Rotary Club, 21 March, 1961.

"Uganda and Kenya", University of Alberta (Edmonton), 22 March, 1961.

"Current Problems of Local Government", University of Manitoba, 23 March, 1961.

JOHN KNAPP

"What Sort of Growth Theory Do We Need?", Ottawa chapter, Canadian Political Science Association, November, 1960.

"The U.K. Balance of Payments Revisited", graduate students and staff seminar, Department of Economics, McGill University, December, 1960.

"Canada and Recent Developments in Western European Economic Integration", lecture in Carleton extension series, Carleton Place, February, 1961.

"Is There a U.K. Growth Problem?", graduate students and staff seminars, Northwestern University, Illinois and University of Pennsylvania, May, 1961.

P. M. LAUGHTON

"Solvent Isotope Effects", Journal Club, National Research Council, 27 April, 1961.

J. A. LOATES

"From Campus to Careers", Cornwall Collegiate and Vocational Institute, 22 March, 1961.

R. O. MACFARLANE

"Tradition and Technology in Israel", Public Service Officers, 4 November, 1960.

"Bases of Democracy in Canada", Professional Engineering Institute, 31 January, 1961.

"Teaching Standards", South Grenville Teachers Society, Prescott, 7 February, 1961.

"Development of Canadian Identity", Junior Administrative Officers, 3 March, 1961.

"The Role and Function of the Public Administrator", Intermediate Officers course, Montreal, 10 and 24 April, 1961.

"The Modern State", Ontario Civil Service Senior Officers course, Guelph, 8 May, 1961.

R. L. McDOUGALL

"The Old Prayer Book and the New Bible", Brotherhood of Anglican Churchmen, All Saints Church, 23 May, 1961.

J. A. B. McLEISH

"The Advantages of Guidance Centres", Progress Club of Ottawa, 27 January, 1961.

"Meeting Canada's Educational Needs", Peterborough Community Assembly, 21 April, 1961.

"Comparative Problems of American and Canadian Education", faculty and students seminar, Graduate School of Education, Cornell University, 24 April, 1961.

"Learning in the Later Years—an Area of National Failure", Friday Club of Ottawa, 9 May, 1961.

K. D. McRAE

"The Interprovincial Conference", CBC television *Viewpoint*, 2 December, 1960.

S. R. MEALING

"John Graves Simcoe", lecture in series, *Our Living Tradition*, Carleton University, 11 February, 1961.

"The Gentry, c. 1550-1650", "Population Increase in the 18th Century", and "The Utilitarians and Reform in 19th Century Britain", all to professional development group (history), Ottawa branch, Ontario Secondary School Teachers' Federation, 18, 23, and 25 May, 1961.

"Private Papers", lecture in extension series, *Historians at Work*, Carleton University, 1 February, 1961; and to Archives History Club, 29 May, 1961.

M. P. MÉLÈSE

"Les coulisses du théâtre au temps de Molière", Western Reserve University, Cleveland, 15 July, 1960.

"Un précurseur des vols interplanétaires: Cyrano de Bergerac", Alliance Française, Cleveland, 20 January, 1961; and Alliance Française, Pittsburgh, 21 January, 1961.

"Le théâtre français d'avant-garde", Alliance Française, Buffalo, 22 January, 1961; and in extension series, *Théâtre et Poésie*, Carleton University, 16 March, 1961.

"Présentation du *Tartuffe* de Molière", CBOFT television, 10 February, 1961.

"Le lieu théâtral de l'antiquité à nos jours", lecture in series, *Théâtre et Poésie*, Carleton University, 16 February, 1961.

"L'art de la mise en scène: décors et coutumes", National Gallery, 28 March, 1961.

"Un théâtre français à Ottawa, serait-il viable?", CBOFT television, 17 April, 1961.

G. C. MERRILL

"The West Indies, a New Member of the Commonwealth", lecture in Carleton extension series, Carleton Place, 22 March, 1961.

J. S. MOIR

"Another Look at Bede's Account of the Anglo-Saxon Invasions", and "Revisionist Views of Edward the Confessor's England", professional development group (history), Ottawa branch, Ontario Secondary School Teachers' Federation, 9 and 11 May, 1961.

H. H. J. NESBITT

"On the Role and Function of Certain Predacious Acari", symposium, Arachnid section, International Congress of Entomology, Vienna, 20 August, 1960.

F. H. NORTHOVER

"The Diffraction of Electric Waves Around a Finite, Perfectly Conducting Cone", seminar, Institute of Mathematical Science, New York University, 7 October, 1960; and seminar, University of Montreal, 9 December, 1960.

"Image Formation in Microwave Systems", mathematics colloquium, Waterloo University, 19 April, 1961.

"A Focussed Twin Antenna for Plasma Measurements", spring meeting, Union Radio Scientifique Internationale, Washington, D.C., 3 May, 1961, (paper prepared with R. I. Primich).

"The Use of the Green's Function in Diffraction Problems", seminar, University of Western Ontario, 17 May, 1961.

E. M. OPPENHEIMER

"The Language Laboratory: Experiences and Hopes", regional conference, modern language group, Ontario Secondary School Teachers Federation, October, 1960.

L. M. READ

"The Source of Authority", Unitarian Church, 6 November, 1960.

"Religion in the Public Schools of Ontario", Elmvale Acres Home and School Association, 10 January, 1961.

D. A. SMITH

"The Distribution of Deermice (*Peromyscus*) in Central and Eastern Parts of Southern Ontario", 15th technical sessions, advisory committee on fisheries and wildlife research, Ontario Research Foundation, Guelph, 4 March, 1961.

"Amphibians and Reptiles in Captivity: the Stocking and Care of Terraria", Ottawa Valley Aquarium Society, 25 May, 1961.

J. S. TASSIE

"The Novel in French Canada", University of Glasgow, 11 March, 1960.

"La fête des Vieux à Auderville (commentaire sur un poème normand recueilli au magnétophone)", Premier Congrès International de Dialectologie Générale, Louvain, 25 August, 1960.

"Propos sur la France rurale", Alliance Canadienne, 19 January, 1961.

W. M. TUPPER

"Origin of Continents and Mountain Ranges", Geological Discussion Group, 10 May, 1961.

F. R. WAKE

"Objectives of the Experimental and Developmental Approaches to Child Psychology", annual meeting, Ontario Psychological Association, February, 1961.

"The Changing Sex Behaviour of Canadian Women", annual meeting, Protestant Girls' Club of Canada, Ottawa branch, May, 1961.

BERNARD WAND

"Content and Function of Conscience", Canadian Philosophical Association, Montreal, 15 June, 1961.

R. A. WENDT

"Perception", "Perception of Personality", and "Learning", CBOT television, 7, 14 and 21 May, 1961, (with F. R. Wake).

FRANK WIGHTMAN

"Plant Auxins: a story of the chemical control of plant growth by man-made molecules", Ottawa section, Chemical Institute of Canada, 24 November, 1960.

"Investigations on the Chemistry and Mode of Action of Plant Growth Substances", Division of Applied Biology, National Research Council, 16 December, 1960.

"Evidence of Beta-oxidation in Plant Tissues and its Application to Selective Weed Control", Plant Research Institute, Central Experimental Farm, 20 April, 1961.

"The Metabolism and Biosynthesis of Indole Compounds in Plant Tissues", Canadian Society of Plant Physiologists, 26 May, 1961.

D. R. WILES

"The Dissolution Chemistry of Cupric Oxide", inorganic chemistry symposium, Ottawa section, Chemical Institute of Canada, October, 1960.

"The Molecule" and "Chemical Effects of Radiation—General Considerations", lectures in extension series, *Nuclear Radiation and Fallout*, Carleton University, November, 1960.

"Apparent Misconceptions about the Function of Education", Carlingwood Kiwanis Club, March, 1961.

K. E. YOUNG

"How Do You Express Yourself?", Association of Administrative Assistants or Private Secretaries, 29 April, 1961.

W. L. YOUNG

"The Lithology of the Seine Series, Northwestern Ontario", Lakehead Institute of Geology, Port Arthur, 27 April, 1961.

III: STATISTICS

Benefactions Received, 1960-1961

Grants and Gifts for Current Operations

| | |
|------------------------|------------|
| Province of Ontario | 485,000.00 |
| Government of Canada | 316,660.32 |
| Annual Giving Programs | 41,286.73 |

Capital Grants and Gifts

| | |
|--|------------|
| Province of Ontario | 400,000.00 |
| Building and Development | 375,705.83 |
| Brooke Claxton Memorial Fund (for Library Books) | 1,559.00 |
| Chartered Accountants' Club of Ottawa | 100.00 |
| Ottawa Presbytery Women's Association | 1,048.00 |
| I.O.D.E. Lady Perley Chapter | 150.00 |

Endowment Gifts

| | |
|-----------------------------------|----------|
| Maurice Frederick Carty Bursaries | 1,200.00 |
|-----------------------------------|----------|

Gifts—Unrestricted

| | |
|--|----------|
| International Nickel Company of Canada Limited | 1,676.00 |
| Mount Pleasant Mines | 1,600.00 |
| Union Carbide Canada Limited | 200.00 |
| J. P. Young Memorial | 120.00 |

Gifts—Restricted

| | |
|-------------------------------------|----------|
| E. M. Saunders | 5,000.00 |
| Alan B. Plaunt Memorial Lectures | 750.00 |
| Aluminum Company of Canada | 1,000.00 |
| Canadian National Sportsmen's Show | 2,400.00 |
| Canadian Pulp and Paper Association | 500.00 |

Gifts for Student Aid

Scholarships

| | |
|--|----------|
| Union Carbide Canada Limited | 1,000.00 |
| Ottawa Business and Professional Women's Club | 200.00 |
| University Women's Club | 100.00 |
| The Ottawa Citizen | 900.00 |
| International Nickel Company of Canada | 3,124.00 |
| Lord Dundonald Chapter I.O.D.E. | 100.00 |
| Regent Vending Machines Limited | 200.00 |
| J. P. Bickell Foundation | 2,400.00 |
| E. B. Eddy Company Limited | 1,200.00 |
| Ottawa Woman's Club | 100.00 |
| Gavin Scott MacFarlane Memorial | 400.00 |
| Clendinnen | 60.00 |
| Parfield Oils Limited | 2,000.00 |
| Spartan Air Services Limited | 250.00 |
| C. V. Hotson Memorial | 685.00 |
| Hleodor Society | 100.00 |
| Ontario Professional Engineers' Foundation for Education | 750.00 |

Bursaries

| | |
|---|----------|
| Falkland Chapter I.O.D.E. | 100.00 |
| Charles Ogilvy Limited | 2,000.00 |
| Maurice Frederick Carty | 1,000.00 |
| Jacob Freedman Charitable Foundation | 1,589.58 |
| A.T.A. Trucking Industry Educational Foundation | 1,200.00 |
| Arnhem Chapter I.O.D.E. | 100.00 |
| Atkinson Charitable Foundation | 6,800.00 |
| J. P. Bickell Foundation | 900.00 |
| Engineers' Wives Association | 325.00 |
| Faculty—for Faculty Bursaries | 823.00 |
| Gyro Club of Ottawa | 500.00 |
| Kiwanis Club of South Ottawa | 500.00 |
| Kiwanis Club of South Ottawa Ladies' Auxiliary | 50.00 |
| Lions Club of South Ottawa | 200.00 |
| National Memorial Chapter I.O.D.E. | 100.00 |
| Ottawa Business and Professional Women's Club | 200.00 |

| | |
|--|----------|
| Protestant Girls' Club of Canada | 100.00 |
| Quota Club of Ottawa | 200.00 |
| Dr. F. T. Rosser | 150.00 |
| Countess of Ashburnham I.O.D.E. | 300.00 |
| Canadian Institute of Plumbing and Heating | 100.00 |
| C. A. Fitzsimmons and Company Limited | 150.00 |
| George Hees | 100.00 |
| Mr. and Mrs. John M. H. Jury | 150.00 |
| James H. Rattray Memorial | 1,000.00 |
| Harry Wood and Company | 150.00 |

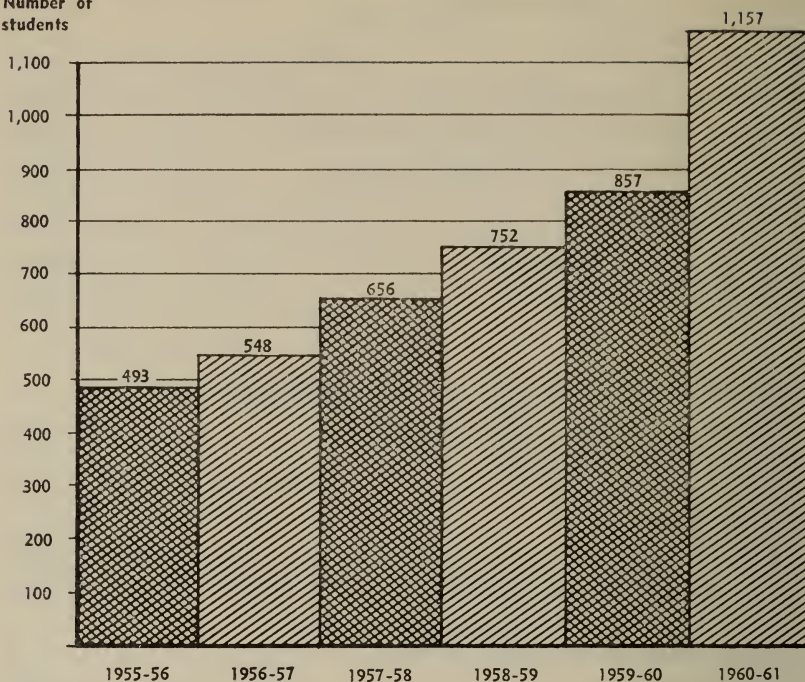
Prizes

| | |
|---|--------|
| American Society of Heating and Air Conditioning Engineers—Ottawa Valley Chapter | 100.00 |
| American Society for Metals | 25.00 |
| Frances Oakes Baldwin | 150.00 |
| Henry Birks and Sons | 25.00 |
| B'nai B'rith Awards | 200.00 |
| Engineering Institute of Canada | 150.00 |
| Canadian Institute of Mining and Metallurgy | 25.00 |
| Chemical Institute of Canada | 25.00 |
| Catherine Daumery | 40.00 |
| Faculty Club of Carleton University | 25.00 |
| Lilian I. Found | 25.00 |
| Mr. and Mrs. Jarvis Freedman | 50.00 |
| Ernest Moulds | 100.00 |
| National Council of Jewish Women | 250.00 |
| Ottawa South W.C.T.U. | 50.00 |
| Riddel, Stead, Graham and Hutchison | 425.00 |
| United Engineers Trustees Inc. | 250.00 |
| Elizabeth White | 40.00 |

Full-time Enrolment

1955-1960

Number of
students



Full-time Enrolment 1960-1961

Ottawa and District 740

Hull and District 31

Other Ontario Centres 236

Other Quebec Centres 63

Other Canadian Centres 31

Alberta 4

New Brunswick 3

Saskatchewan 6

British Columbia 1

Nova Scotia 7

N.W.T. 1

Manitoba 7

P.E.I. 2

Foreign 36

British West Indies 9

Ethiopia 1

Pakistan 2

Ceylon 1

Germany 1

Sierra Leone 1

Dominican Republic 1

Hong Kong 9

Sweden 1

Egypt 1

India 2

U.S.A. 3

England 1

Malaya 3

Colombo Plan Students 20

British Guiana 1

Ghana 3

Nigeria 3

British West Indies 4

Indonesia 2

Sierra Leone 1

Brunei 1

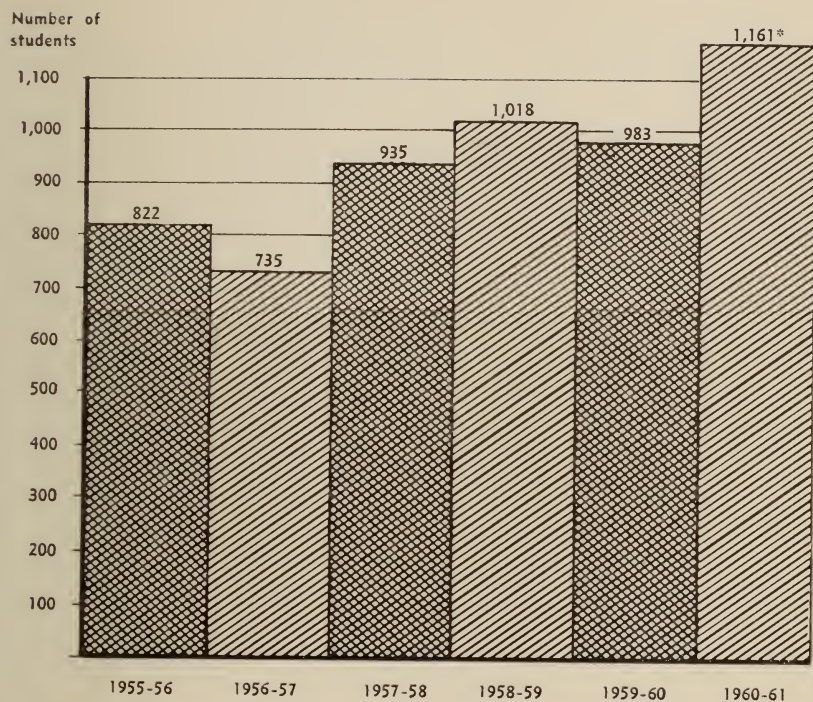
Jordan 1

Burma 1

Malaya 3

Total 1,157

Part-time Enrolment 1955-1960



*In addition, 508 students attended the summer session in 1960.

